THE FUNDAMENTAL PRINCIPLES OF
AYURVEDA Part II
Outlines of Samkhya Patanjala
System
By C.Dwarkanath

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Fundamental prin.

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The
ndamental Principles of Ayurveda

PART II

UTLINES OF SAMKHYA PATANJALA SYSTEM

BY
C. DWARAKANATH
PRINCIPAL
GOVT. AYURVEDIC & UNANI COLLEGE
MYSORE

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OF SAMKHYA PATAJALA SYSTEM

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This ork is dedicated by t
to the distguished Medical Sci
Col. Sir. AMNATH CHOPRA, C.I.
Sc.D., F.R.C.P. I.M.S. (

L-B
N52·2

FOREWORD.

great privilege to introduce this volume
kers of Truth. To explain the origin
nd the course of its evolution has been
ent enquiry and research by Man. From
it was felt that real happiness or bliss
ly by securing a correct knowledge of
sibly the nearest approach to the un-
stery was made in India, earlier than in
he world. Naturally, an early approach
listic—led by Kapila Muni, his teach-
intained by Iswara Krishna. But it was
chings of Patanjali Rishi and others who
lanation of the Universe on a Theistic
of years later, the western philosophers
the same trends of thought, and among
such immense faith in his own reason-
ssert that "If given water, chemicals
create a Man." The western scien-
a Haeckel in the present twentieth
proaching the findings of ancient India
research in Physiology, Biology and
finding that "*all attempts to explain*
of non-vital phenomenon do not lead
ptions, but to ideas which the science of
ury would have called mystical." The
chanistic physiological explanations fail
gin of Life. Only through Samkhya
hat one may get a glimpse of an explana-
between the inanimate and the animate

of these Darsanas was, even in the
t with enormous difficulties—one such
the Grammarian and the Logician who
ts just as they pleased. Later when the
s getting obscure, there was no limit to
Later stilt, when the country became a

subject of invading hordes, the texts had to be
memory of certain chosen people, as it was co
invaders to set fire to libraries. This was follo
hiding of the knowledge by a few gifted
gradually lost the real idea of the original R
could not correct their ideas by comparin
others who happened to have parts of the te
diverse ways, the true knowledge of the t
correct interpretation was mostly lost—leadi
of fanciful interpretations being given. No
Darsanas which form the fundamentals of
came objects of derision by the allopaths,
support of the Governments in India, and
even heard of such Darsanas.

I am extremely grateful to the gifted a
volume for his perseverant and enterprising
a feast of these intellectual feats, where the
the gift of the great Darsanacharyas, the si
selected from authors like Alexis Carrel, t
"Man—the Unknown," R. W. Moncrieff, t
"Chemical Senses"; Whitehead, the author
and the Modern World"; James Jeans, th
"The New Background of Science"; Marg
the author of "Consciousness and the Bra
C. Moulyn, the author of "Functions of Poi
in Time measurement" and others.

Further, he has written the book in a la
widely known at present, so that he can brin
message to the largest public possible. He h
using Key-words when he has to help the s
over obstacles offered by new conceptions
Sciences, which are parallel to or identical w
ceptions of ancient India, which without suc
have baffled him. His apt quotations to n
postulate of the Samkhyas that "the Purus
starts the process of evolution, but also cont
present uncharged throughout the process,
evolvent and the evolute," go a great way in

: that there cannot be an unbridgeable gulf
living and the so-called non-living. His
Tanmatras and the Quantum Theory" must
enlightened critic, very often the practising
ause before he scoffs at the Fundamentals of

inspiration in every page and matter for
ation throughout the book and I hope great
from the publication of this book.

M. R. GURUSWAMI MUDALIYAR, B.A., M.D

Honorary Director,
Department of Indigenous Systems
of Medicine, MADRAS.

AN,"
ras-10.
53

AUTHOR'S NOTE

The present work, like the preceding
Outlines of Nyaya Vaiseshika System of Na
sophy—is based on the lectures I have beer
to my students of the first year course of t
ment Ayurvedic and Unani College, Mysore,
when the subject Vedanta Vignana ('Darsan
to Ayurveda') was included for the first
revised curricula of studies which was
introduced. The importance of the Nyaya
and the Samkhya Patanjala systems of phi
sophy for the study of Ayurveda in part
modern sciences in general (including medi
ne stress. If a good working knowledge of t
and biological sciences (including the psych
deemed necessary for the study of modern
its different branches, the study of the Nyaya
and the Samkhya Patanjala systems a as no les
to have a proper appreciation of Ayurveda,
doctrines are, to a large extent, founded on th
of these Darsanas.

The need for such a study becomes
day in view of the development of the
and diametrically opposed schools of thou
biological science, viz. Mechanistic and
schools, which between them seek to explai
nomenon of Life, Life-process and Living-
the point of view of mechanistic causation an
purposivism respectively. Whatever may be
outcome of these two modes of approach to
an explanation of Life, Living-states and Li
some of the contributions made by these two
of considerable value to all students of
sciences (medicine included), especially to
Ayurveda-the Science of Life-where such co
present striking resemblance to some of the
doctrines of the Darsanas now under reference

alue of the Darsanas, especially the Samkhya, dents of science, whether medicine or any be better appreciated from the views expressed a person than that outstanding natural our times, Professor J.B.S. Haldane, who in of a lecture delivered last year to the students don University College, made a reference to tance of the Samkhya system to modern hought. In his letter dated 5th December ssed to me, Professor Haldane writes :

> I merely wished to point out to students of this College [illegible] atomic theory was put forward in India somewhat [illegible] as in Europe, that one or more continuous [illegible] ideas [illegible] also postulated, and in particular that the attribution [illegible] of what in European thought are called mental phenom- Prakrti were almost (but not quite) as far as a thoroughg it could with. I suggested that the Samkhya analysis of [illegible] occurrences had probably been superseded, but that sis of "mental" occurrences might still be valuable.
>
> ut the lecture was of a most superficial character and in a contribution to scholarship. However, ignorance of so profound here that I do not regret giving in."

aware that in presenting a work on such a subject as the Samkhya system, I am possibly a task which minds greater than mine have o expound. However, my task was made easier t on the availability to me of some of the commentaries on the Samkhya system, those of Gaudapada, Vignana Bikshu and addition, I had the privilege of being assisted k by my erudite and versatile brother Sri C. andanacharya, and Professor M. Yamuna- .A., Assistant Professor of Philosophy, Mysore with whom I discussed the different topics in this work. In addition, I have drawn the monumental contribution on the 'Positive the Ancient Hindus' by the late lamented Brajendranath Seal and also the contribution red preceptor, Vaidyaratna Capt. G. Srinivasa the "Science and Art of Indian Medicine," e second volume of the report of the Chopra e.

I have, in this work, been able to dea
few important topics and I make no cla
exhausted the subject. I have dealt wit
aspects which are immediately useful to th
medicine, especially those of Ayurveda o
of Life.

I am greately beholden to Dr. L.
Professor of Physics, Mysore University a
First Grade College, Mysore, for having giv
valuable suggestions in respect of the str
Tanmatras and Bhuta Paramanus. I am
to Dr. A. N. Narasimhiah, M.A.,Ph.D.(Lon
read through the proofs, and to that great
M. R. Guruswamy Mudaliar, B.A., M.D
Director of the Department of Indigenou
Madras, for having contributed an extre
Foreword to this work. I acknowledge my
S. Narayana Sastry, Dip.-in-Sten., M.I.S., S
but for whose neat, efficient and quick ty
manuscripts, it would have been difficult fo
got through this work in its early stages.

I am earnestly hoping that, as expre
Guruswamy Mudaliar, this work will prove
to all earnest " Seekers of Truth ".

GOVT. AYURVEDIC &
UNANI COLLEGE,
MYSORE.

C. DWARAK

26—10—1953

Princip

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tal Principles of Ayurveda

es of Sāmkhya Patanjala System

so far in the first part of this series
f the *Nyāya Vaiseshika* system which have
by *Charaka* and shall now proceed to
Sāmkhya Patanjala system on which
nd *Susruta* have relied.

cance of the term *Sāmkhya Patanjala*
ome evident from the very name of the
iz., the *Sāmkhya* and *Patanjala* systems
he former is known as the *Nirisvara*
the latter as *Seswara Sāmkhya* or the
a philosophy. The authorship of the
ed to *Kapila Muni*. Its date is traced
riod and its origin to *Vedās* and *Upani-*
mkhya philosophy of Kapila has, however,
e *slokās* now available are those of *Isvara*
stated to have lived sometime in the
. D., and it goes by the name *Sāmkhya*

ali Muni is ascribed the authorship of
which are also known as *Sāmkhya*
Patanjala Darsana, which claim to
ailed explanation of the *Sāmkhya*.

em, these two schools of the *Sāmkhya*
ilosophy, are supplementary and com-
one another. Hence the name *Sāmkhya*
m given to them.

The term *Sāṁkhya* is derived
Saṁkhya. The latter term is usec
thinking and counting. Thinking is
the basic principles or knowledge of t
ing[1] refers to the enumeration of the
or principles of this system. The t
in this term will become obvious fr
extracted from the *Sāṁkhya Pravc
Vijnāna Bhikshu* : [2]

देवता यद्यपि वेद यदि न व
अपरो न सुविज्ञेय अतो व

From this it follows that the
the knowledge of the *Self* through rig

The *Sāṁkhya Patanjala* system
bigger and more comprehensive a
Nyāya Vaiseshika system. If the la
many respects '*deterministic*'[3] in
former is definitely '*purposivistic*'[4]
looks upon all things of the Universe
an evolutionary process arising as a re
tion, transformation and integration th

1 "... वर्त्त तस्य विज्ञान" Atharva I

2 This is an important commentary on
by Vijnāna Bhikshu.

3 *Determinism* is the materialistic explanation
and it holds that "Since all things consist of Ma
Matter is susceptible the same, there is only one wa
can believe, to given circumstances. The laws of na
therefore, if we know those laws, and of the pre
disposition and position (state of the matter) in a giv
moment, we can predict the state of affairs in that
except in so far as it is affected by other matter outsi
does not in fact the whole Universe at any one time
whole history of the Universe like the working of a
Wheeler," An introduction to Philosophy, p. 93

4 *Purposivism* is an interpretation of phenomena
terms of purpose.

tuff which is marked by a quantitative
is would amount, in the words of
to "the earliest, clear and com-
t of the process of cosmic evolution,
ere metaphysical speculation but as a
e based on the conservation, the
l the dissipation of energy."

eresting to note in this connection
Conservation of Mass and Energy
of quantitative work in chemistry
first time by Lavoisier in Europe in
the belief in its truth was current
ng the Greek philosophers. This Law
total amount of matter in the Universe
ever changes take place in its dis-
The mass of a system is unaltered by
takes place within it," or "The total
s taking part in a chemical change
l throughout the change". In the
r, "Nothing can be created and in
re is just as much substance present
he process has taken place. There is
the form of matter".

ncient Greeks are stated to have ex-
merely as an opinion or belief, the
ystem on the other hand, posited it
ple which was fully made use of and
by such positive sciences as, *Ayurveda*
istra, etc.

The Mechanical, Physical and Chemical Theories of —A history of Hindu Chemistry by Dr. P. C. Ray.

Leaving Lavoisier's Law of Conserva
and its importance to quantitative work
aside, it will be interesting to note t
advanced and progressive modern trends
physics or what is known today as the '
posits the concept of quantitative perma
Matter in the Universe, comprehending sp
change and transformation, or better still,
tion of Matter as the '*Component of pa*
description bears a striking resemblance to
Patanjala concept of "*Samyukta Viveka*
difference that the '*New outlook*' of t
physics today has yet to discover and stat
of measurement, number and quantity on
and the transformation of pattern on the o
the *Sankhya Patanjala* system, true to th
its meaning, has stated the Law or l
relates measurement, number and quantity
lopment and transformation of pattern, w
purpose to study here.

The Aims of Enquiry

It was mentioned above that the o
Sankhya Patanjala system is essentially '
It claims to have analysed the pheno
Universe and stated the end or goal toward
process of evolution moves. The know
process is claimed to reveal the origin
and the relationship that exists betwe
'*Mind*' and the '*Soul*'. Between them, th
the '*Tripod*' or '*Tridanda of Life*', wi
to creative evolution.

e view of the *Sāmkhya Patanjala* system essentially a dualistic system, the entire an organism, and it represents a '*process*' s in two phases viz., '*Parināma*' or evolution ession resulting in "*Pralaya*" or disintegra- an invervening interval or pause (inactivity ce). The *Matter* and the *Manas* (or *Mind*) ne hand and the *Soul* or *Atma* on the the active participants in this process. The on of consciousness or awareness which o feelings of pain and pleasure, misery and the *Bhokta* or the Experient, are in this cit in the evolutionary process itself.

khatraya or the Threefold Miseries

ms of life are stated to be assailed by three *ukkhās* or miseries which can, it is stated, be by instituting a critical enquiry into and the ent of the origin, nature, purpose and that exists between the *Prakriti* (Matter), (Mind) and the *Atma* (Soul).

threefold miseries or *Dukkhās* mentioned

dhyāthmika Dukkha or miseries (unhappiness) nt of factors which operate from within the sm ;

dhibhoutika Dukkha or miseries caused by h operate on the living organism from

dhidaivika Dukkha or miseries caused by l causes or acts of God i.e., factors that are man control.

Adhyatmika Dukkha: This kind of a dual origin viz.,

(a) *Saririka* or somatic i.e., or constitutional origin; and

(b) *Manasika* or psychological i.e origin.

Miseries of *Saririka* or somatic nature the imbalance of the *Tridoshas* or the three of the body, i.e., *Vayu*, *Pitta* and *Kapha*, the production of such pathological c *Sirorogas* (diseases of the head); *Pratisya* aryngitis); *Jwara* (pyrexias or fevers); *Sula* colic); *Bhagandara* (fistula-in-ano); *Gulma* tumours); *Arsas* (piles or haemorrhoids (dropsy or anasarca); *Sosha* (asthe (emesis or vomiting); *Akshirogas* (diseases *Atisara* (diarrhoea); *Kushta* (leprosy) etc.

The miseries of the *Manasika* origin are stated to arise out of the separation of th what is liked and its union with what Either the one or the other is stated to production of various kinds of emotion tensions, suppressions, frustrations and inh yield the one or the other of the following e

1. [illegible]

2. [illegible]

ma i. e. lust and libidinal impulses ;
rodha i. e. anger, rage etc ;
aya i. e. fear-complex ;
ssha i. e. hatred and dislike ;
bha i. e. greed and covetecousness ;
ha i. e. delusion, hallucination etc ;
ada i. e. depression states, dejection of spirits, desponderncy and maniacal tendencies ;
ka i. e. grief ;
ya i. e. jealousy ;
amāna i. e. humiliation ;
ha i. e. envy, impatience ; and
ttarya i. e. intolerance, spite and malice etc.

Adhibhoutika types of miseries[2] are due to operate on the living beings from without i.e., nvironment. These factors include living f different kinds viz., *Sthāvara* or plants ; viviparous *Andaja* or oviparous ; *Swedaja* sweat (or *Malaja* i.e., excreta) and *Audbhija* the soil, and creatures arising from human n), avian, reptilian, acquarian and amphibian uding insects like gnats, mosquitoes, lice, tors, sharks etc.,), as also static objects.

[illegible]

[illegible] (Vishnu Purana)

[illegible] III ; 16)

[illegible] (Vishnu Purana)

Adhidaivika types of miseries[1] ar
arise out of natural causes, such as
storms, cyclones, tempests, thunderbolts
these are beyond human control, they
arise out of the acts of God.

The *Sāmkhya Patanjala* system ho
"*obvious and evident*" means made
Vignāna or sciences, including *Ayurveda* o
of Life, for the prevention and cure of
the avoidance of and protection against v
of miseries (i.e., *Dukkhatrayas* are not lasti
ing. The chances of their recurrence ar
the very nature of things. Even otherwise,
measures offered by *Ayurveda* and o
calculated to ward off the different for
themselves cause sufficient unhappiness a
example, the administration of different ki
ments possessing unpleasant tastes and ca
sant reactions, themselves produce suffic
In the same way, the employment of su
tions—*Agnikarma* (cauterisation), *Kshār*
application of alkalies and caustics) and
the use of different kinds of surgical ins
their turn, cause sufficient mental and physic
insecurity of life, the prospect of death an
the unknown, are yet other sources of cons

The *Sāmkhyās*, therefore, assert wi
reason, that the "*obvious and evident*"
prevent and secure freedom from variou

1. [illegible]
[illegible] and [illegible] (Vishnu Purana

lack certainty i. e., *Ekantata*, and finality
antata. In common with most of other philo-
systems of ancient India, the *Somkhya*
a system has taken the view that,

the freedom from and security against all
of miseries (and pains) can only be secured
stituting a searching and critical enquiry
not only the 'how' but also the 'why' and
efore' of the Universe, the emergence of life
he laws governing them ;

. arising out of the above, the banishment
orance and the acquisition of true knowledge
rselves', are the only means which can be
ed to secure for humanity, the freedom from
immunity against the threefold miseries
and now' and 'salvation in the hereafter'.
the context of the complexities of modern times,
l to acquire a true knowledge of '*ourselves*',
rned more than an academic importance and is
nphsised by a large number of leading scientists
orld. The Nobel Laureate Dr. Alexis Carrel,
g up the present position arising out of the
ble developments that have taken place during
five decades in the field of Science, Medicine and
which have effected an almost radical and
nary change in man's environment, his mode
and outlook, sounds a note of sober caution
ccepting these as unmixed blessings in the
of a true knowledge of '*ourselves*'. To quote
words :

However, the longevity of the men proficient in
of sports and enjoying every advantage of

modern life is not greater than th
It may even be less. Their resis
worry seems to have decreased.
individuals accustomed to nature
hardships, and to the inclemencies
were their fathers, are capable o
sustained efforts than our athletes
products of modern education nee
food, and regular habits. Their nerv
They do not endure the mode
cities, their confinement in offices,
ness, and even the every day difficu
life. They easily break down. I
of hygiene, medicine and modern
advantageous as we are led to beli

"We should also ask ourselve
the circumstances attached to th
death rate during infancy and
weak are saved as well as the stron
no longer plays its part. No one
the future of a race so well f
sciences. But we are confronted
problems, which demand immedia
infantile diarrhoea, tuberculosis,
fever etc., are being eliminated, t
degenerative diseases. These are
of affections of the nervous syster
In certain states the multiplicity of
to the asylums exceeds that of the
other hospitals. Like insanity, ne
intellectual weakness seems to b
frequent. They are the most activ

of the destruction of families
on is more dangerous for civilisation
diseases to which hygienists and phy-
exclusively devoted their attention.

then, that changes produced in our
echnology have influenced us pro-
fects assume an unexpected character.
different from those which were
ch could legitimately be expected
ements of all kinds brought to the
le of life, the diet, the education
l atmosphere of human beings. How
ical result being obtained?

swer could be given to this question.
n finds itself in a difficult position
suit us. *It has been created without any*
al nature (*italics mine*). It was born from
ific discoveries, from the appetites of
s, their theories, and their desires.
ted by our efforts, it is not adjusted
(*italics mine*). Thus, it appears that
which science and technology have
loping for man, does not suit him,
en constructed at random, *without*
self (*italics mine*).

ssible remedy for this evil is a much
wledge of *ourselves* (*italics mine*). Such
able us to understand by what mech-
xistence affects our consciousness and
ll thus learn how to adapt ourselves
es, and how to change them should a
ne indispensable. In bringing to

light *our true nature* (*italics mine*), or
the way to actualise them, the scie
explanation of our physiological
moral and intellectual diseases. We h
of learning the inexorable rules of ou
tual activities, of distinguishing th
the lawful, of realising that we are n
according to our fancy, our environ
Since the natural conditions of ex
destroyed by modern civilization,
(*Italics mine*) has become most necessa

The Nature of Man

Many have been the branches
augurated by man. Arising out of
the progress of science and technolo
mental. Of these, the science of m
physics has perhaps reached a stag
which has given man the mastery ov
The physicist now confidently
physical events with which he alone
concerned, are all of one order, are
one nature. He proceeds on the a
physics is adequate enough to ex
phenomenon of man who is an organ
of physical, biological and mental
interrelated and which interact with o
also react with the environment in w
the other hand, the biologist who in
with the behaviour of living matter,
biological events to those of the phy
both within and around the orga
guarantee whatsoever that the bio

1 Alexis Carrel, "Man the Unknown", op. c

xpress only the native laws, as those of ces.

ituted not only of matter, which in of the act of living, exhibits a be- much different from those of the mposes him. This apart, the develop- e in the different aspects of psychology ention to the existence of a possible in kind, not only between the physical vents, but also a marked difference ical and mental events. The events of have presented an extremely difficult annot be ignored. There is a strong trifurcate man into three different hysical, biological and mental. The physicist, as already stated, assumes re and behaviour can be described erms of physical structure and events s attitude is based on the belief, that es are adequate to explain all biological gument takes the line that the laws e laws of material systems and of all in them; all organisms are material he laws of physics are the laws of all in the organism.

of view, however, ignores two very losely related peculiarities of viz., most, if not all organisms nscious events, and in most, if not ents take place as if they move towards objective. This movement towards is called 'goal-seeking' can be seen ant processes of life, such as growth,

especially growth by which bodily injuries
which can be seen very clearly in the way i
animals behave. In this, as in many ot
patterns, we see that the living organisms
higher, envisage a goal, make serious effort
pressing into service all means available t
covering many means not otherwise obvi
are seen the manifestation of two types
that characterise a living organism, vi
activity and goal-seeking, signifying two
total system of activity spoken of as p
activity.

In contrast to the psycho-physical ac
to the living organisms, the non-living
physicist exhibits no evidence of these tw
and intimately correlated peculiarities
organisms. The laws of physics so far k
therefore, appear to be adequate to ex
light on either of them.

1) It is, however, clear that the l
ism with which we are immediately
the seat or centre of many events v
described as purely physical events
in terms of *deterministic* and determin
viz., the flow of blood in arteries
the activity of bones and muscles
comparable to levers of different
movements of the body-knee jerk, m
changes like the use and release of
haemoglobin.

2) It is the seat of mental events
are fully aware and which are essen
tistic" in nature, and,

is also the seat of events which are
y physical in nature, but which appear
he help of the mental, to direct and guide
particular ways—essentially *purposivistic*
. The mental influence that directs and
e physical, modifies the latter in several
s.

he reverse is also true i. e., many physical
uch as the physical stimulation of a sense
s seen to initiate and in some cases
certain essentially *purposivistic* mental

seen from the foregoing that the two kinds
the physical and mental, exert reciprocal
living an interplay of *mechanistic-physical*
tic-mental events. There is, however, no
ed on the assumption that in the living
ife-process, these two events have distinc-
sets of laws to govern them. Such an
prove to be a distortion of one indivisible
ese are in reality two vital aspects of a
distinguishable and inseparable psycho-
ity.

ronment in which man lives and of which
ral part, is again a field of activity of
ated and inter-dependent forces—physical
mental. But all these do not explain
fe is. This has raised a more difficult
to how inanimate matter became
other words, the emergence of the living
living. These questions were in the past
ent sought to be answered by the different
ntists and philosophers of ancient India.
wer may perhaps be taken note by us here.

The old *Chārvākas* and *Lokāya*
philosophers posited the view that, "
a function of the body which is an in
for its manifestation. Consciousness
particles of matter. When these pa
arranged into a specific form, in a m
fically explicable, they are found to
Life and consciousness are identica
power is destroyed with the dissoluti
by whose combination it is evolved.
produced from the body which is en
vital air. Without sensation no cons
ble. When the body perishes, no
remain; it must perish also. So t
transmigrate. The body consciousnes
are momentary. The mind is me
combination of elements, just as wine
chemical combinations. The four el
bined, produce or manifest the mind
reality than they. The instinctive m
pressions of new born babies are due
as much as the opening and closing
other flowers at the different hours o
or the movement of the iron under t
loadstone. In the same way, the sp
tion of living organisms is frequently
case of animalcules which develop in
infusions or of the maggots or other
developed in the constituent particle
like, and which begin to live and mov
It is an indisputable fact that sensation
can arise only in so far as they are
bodily mechanism. But it would not

eptacle of consciousness. The proper-
preparations of food and drink condu-
velopment of the intellectual powers,
proof in favour of the fact that con-
function of the body. As contraction
f the muscles, so does the brain gene-
novements and feelings. The mind,
substantial reality of its own, but
he vibrations of the molecules of the
e molecular activity of the brain sinks
evel, consciousness disappears and the
ist, as in sleep. When again it rises
egree, consciousness reappears. The
not a life of continuity; it is coming
nto nothing. The hypotheses of a con-
of consciousness is a myth of divines
".

xtracted above are very ancient, albeit
tain their freshness and force in the
e distant past. The current view of
known as the "*vital phenomenon*",
gists bears a close resemblance to the
views in many respects. For example
ologist, Dr. Philip A. Mitchell, Ph. D.,
Professor of Biology, Brown Univer-
cussing the fundamental laws of Bio-
emistry, in the introduction to his
General Physiology, observes that, "the

The Charvaka philosophy" by Sri Dakshinaranjan
ed to the "Cultural Heritage of India" published by
n and extracted in the Ayurveda Siksha- "Physio-
pt. I, Section II, pp. 276-277.

final goal that physiology has set for
the faith which animates its workers.
text of this faith is: All vital phenomen
plained by the laws of physico-chemical s
physiology cannot make those explanato
not preclude hope for the future. Physiol
at least that the fundamental laws of bio-p
chemistry are those of ordinary physics a
This means (1) *That life is regarded as no*
less—than a very complex series of chem
tion; and (2) that the *law of conservati*
assumed to apply to all those phenomen
living, just as it does to all others. W
utilised by the process of oxidation in p
mals, the energy so liberated, though
diverse forms, may all be measured and i
foretold from the fuel value of food. C
event in living matter can only be a tra
energy from some detectable source. I
matter does not produce something ou

"—The mechanistic nature of even
which starts the development of ovum ha
strated. For this process, fertilisation
sperm cell was formerly supposed to
the case of all sexually reproducing org
such is not the case. Certain non-livi
equally effective. Eggs have been made to
posing them to certain salt solutions, to
to suitable pressure. Eggs of numerous
mals have been thus stimulated succes
ova develop in response to such stimul

nogenesis. The experiments usually termi-
death of the resulting organism at an early
but with certain kinds of technique,
full adult stage has been observed. Loeb
artificial parthenogenesis of frog eggs by
one with a needle. Although a large pro-
gs develop only partially before death, yet
them, adult fatherless frogs have been
fficient numbers to demonstrate that the
instigation of complete development need
more than a mechanical force "[1] The
ysiologer, Haeckel, belonging to the school
ic monism, went to the extent of conclud-
given water, chemicals and time", he could

wever, becoming increasingly clear, as stated
hat, "...even a fundamental scientific expla-
go no further in the light of present know-
o reduce all process, even those of life, to
movements of quanta, the units of energy.
aces the question of what is a quantum, no
erms of a mechanical model is available.
h as all matter has been shown to be merely
herein quanta, chiefly in the form of elec-
otons, are behaving in certain special and
ys, the world and everything in it both
n-living is resolved, by attempts to reach
and ultimate concepts into that which
tated in mechanistic terms. The bearing
physics' upon philosophical thinking is a

[1] Introduction to General Physiology by Marshall, pp. xv-xvi

subject of much discussion by
ever the outcome of such debate
clear. All attempts to expla
of non-vital phenomena do not
cepts, but to ideas which sc
century would have called m
limitations of science are just s
to explain the nature of elvi
mena as they are in attempts to
successful mechanistic physiolog
they do not explain the infinite

This leads us on to the q
is the truth behind all these ma
and the inanimate; the non-li
the *Sāṁkhya Patañjala* syst
seek a plausible and scientifical
of this great riddle, which we n

The Pramāṇas or the Mean

The *Pramāṇas* are the mea
truth. There are three in n
Patañjala system. They are:

1. *Pratyakṣa* or perceptio
2. *Anumāna* or inference,
3. *Śabda* or valid testimo

1. Introduction to Comm. Pro
Ind. Edition) 1906.

2. Whether some "means" as the
"Perception may not reveal the whole of t
The method of observation is limited to
means, inference and reason."

Inference on all means, can neither
evidence, except, within limits

...a has been defined as the instru-
...and signifies the state of mind to
... viz., freedom from doubt, errors,
...ression of memory. These are
...ntact of sense-organs with their

...ma in the process of perception
...up for considerable discussion and
...ati Misra sought to describe it as
...the result of the mental state is
... and by the *Atma*].

...rama has raised the issue whether
... *Atma* and has been met with the
... *Yogasutras of Patanjali*, that cogni-
... with which only *Atma* is concer-
...tion of the mind. This is further
...nation that the *Atma* is reflected
...s assumed the form of the *Artha*
... the *Indriyas*. Hence the illumi-
... the *Atma* at the moment of con-
... with its object is stated to result
... considered to create a misappre-
... and not the *Atma*, is responsible
...her words, a case of mistaken

... the possession of a suitably cultivated mind
... an attitude, which is unprejudiced, stocked
... science and faith
... [Yogasutras, vi, 20] and
... [Ibid iv, 23]

Pratyaksha Pramana or (

Before proceeding to the dis
Pramana i.e., perception arising ou
necessary to state even at the outs
the *Sankhya*, the *Manas* [*Buddhi*
of matter, or better still, a modifi
it is enveloped by the qualities of
of *Buddhi* is the apprehension
enveloped by the attributes of
it is considered to be inacti
till it is actually roused to act
impulses from the *Indriyas* arisin
with their objects. The *Thamas*
tivity of the *Manas* is considered
contact of the sense organs with
This is stated to be followed by t
intellect) through the pathways o
its assumption of the particular for
ted by the latter. The assumptio
form of the particular object, is d
(or perception by observation)
knowledge.[2]

---

1. "The receptors constantly flood our
never ending, except to a large extent in sleep
make us our unique life and all our conscious
messages come to the brain from the receptors
not be possible, although it would be so to
extent the sensations from receptors of S
and tactual, to all animals with a brain, the
to the mind. They extend the environment
The Chemical Senses by R. H. Stoddard, F.

2. According to [illegible] "
sense because of an object or situation affect
one of sensation." Mind Culture and [illegible]
Orr, Ch. VI, p. 107.

s stated to experience the result of the
ddhi being a modified form of matter,
is non-intelligent, is stated to produce
determination. The familiar use of
'I am happy,' in this view, refers to
telligence i.e., *Atma*

e Mechanism of Pratyaksha.

es implied in *Pratyaksha* is illustrated
ng anology :

in a tank, whose nature or property is
quil when its outlet remains closed or
pen, however, the outlet is opened and
turbed, it flows through the channel of
ring its passage water assumes the form
or the conduit through which it flows
s circular, the water flowing through it
cylindrical shape ; if it is rectangular,
of water will also be rectangular ; if it is
into a square field, then it will assume
field, or circular when let into a circular
h.

ratsd to be the case with *Buddhi*, a part
ed to flow through the related pathways
ans and assumes the form of the objects
em. The other part reflects the image of
telligence) or *Atma*. Accordingly, the
ligence) or *Atma*, which in reality is free
such as, contact, agency etc., becomes
arough its image reflected in the *Buddhi*."

[illegible] of Pratyaksha is as follows : " Perception
[illegible] as the sequence between, and connection, among
[illegible] of the Soul, the Senses, the Mind and the Sense

[illegible] (Charaka, Sutra, 11 ; 20)

The real experient is, therefore, the r
the *Atma*.[1] The *Drishta* or perceptic
is the application of the senses to thei

Sense perception gained by ob
ascertainment of knowledge through t
sense organs works under a number o
therefore, it does not provide a compl
ture of the nature of things. The
following as the limitations of sense
account of excessive distance, excessive
to senses, inattention, minuteness, obs

---

1. Charaka describes the processes intelligent experience as follows: "The Self in the knower from its contact with the instruments of knowledge and understanding. But in the absence of the even they are defective, there is no cognition."

आत्मा ह्यात्मानमात्मना सम्प्रयुक्ते
करणैरात्मभिश्च यदा तस्य प्रवृत्तिः
सम्पद्यते तदा ह्यात्मा ज्ञाता भवति ।

(Charaka, Sarira, 1)

2. प्रत्यक्षस्योपलम्भे तु .....

(Karika V)

प्रत्यक्षेणोपलभ्यन्ते सम्प्राप्तिविषयेषु
अप्राप्तयो हि सम्प्राप्तौ

(Goudapada)

Note—The various sensible receptors or sense organs in modern times have been grouped on the basis of the groups are those of (1) Exteroceptors, (2) Interoceptors and Proprioceptors respectively. The Exteroceptors are the external surface of the body and are stimulated by external environment. The Interoceptors are situated of the body viz., mouth, alimentary canal etc., and are stimulated by coming in contact with their surface, and Proprioceptors are situated within the tissues of the body and are stimulated by these tissues."

e with what is similar, even the existent perceived."[1]

ords, even the existing objects are not

ount of excessive distance, e.g., persons r country;

ve proximity or nearness of the object g sense organ, as in the case of the inabi- o perceive collyrium in itself;

or disease of the senses, as in the case of ness, anaesthesia of the skin;

f attention, as in the case of inability to en a person's attention is distracted and -occupied with some ot[illegible] ughts;

ness of the objects, a in the case of ules of smoke, corpuscles of light etc;

ction of the object by other objects que curtain or screen;

ession, as in the case of planets, asteri- whose rays, by which we recognize them by the sun;

e with the mass of similars, as in the sand being mixed up in a mass of sand r in a mass of water.

---

[1] [illegible]

[illegible]

(Samkhya Karika VII)

We may here note *Charaka's* ... visible and the invisible, and the li... gained by sense perception or obs... part I of this series p. 19.[1]

"The ■visible is limited, wh... unlimited world of which we are ... evidence of authoritative *Agamas*. ... In fact, even the very senses, by ... observations are obtained, are th... range of observation.

"When it (the object) is either t... from the observer; when it is ... objects; when there is some defe... sense organ; when the observer's ... elsewhere; when the object is very ... it is overshadowed by something ... is microscopic."[2]

The *Sāṁkhya* makes a further ... tion that "The non-apprehension ... reasonableness and not non-existen... ascertained by its effects. Those ... and the rest, and they are rend... Nature. Nature as the cause exist...

---

1. ...

2. ...

3. ...

a or Perception gained by inference.

umāna or inference is the next method knowledge of things, especially those guisable by the instrumentality of organs. It is based upon *Pratyaksha* sence perception. Says Charaka:

s that which, having its basis in obser- e to conclude in three ways and with e three parts of time. Thus, we infer om the observed smoke, as also (the g from the (present) signs of pregn- ancy, the wise infer the past from the orn fruit from the seed, having obser- fruit is like unto the seed."

of three kinds viz.,

(Charaka, Sutra 11; 21, 22)

take note here of the *Pramanas* of the different schools nt India. *Charvakas* entirely relied on the evidence of *Anumana* as a means for the ascertainment of know- Vaisesikas recognised *Pratyaksha* and *Anumana*. The two *Pramanas*, viz., *Pratyaksha* and *Sabda Prama-* ma in addition to *Pratyaksha*, *Anumana* and *Sabda*

i. *Pūrvavat* i.e., (*apriori* or) inferenc
from cause e.g., as rain from cloud. (An *apr*
one not derived from observation; an *apri*
one arrived at independently of observation).

ii. *Seshavat* i.e., an inference of cause
as of rain from flood in a river (or *aposteriori*
posteriori idea is something which the thinker
ved; an *aposteriori* belief is one arrived at
dence of observation.

iii. *Sāmanyatodrishta* i.e. commonly see
on analogy or *upamāna* e.g., the observation o
one town now and seeing him in another the
because he has moved, or the inference th
must have moved, as he is found in diffe
tions in the sky during different parts of the d

Sabda Pramāna or Āptavachana.

Sabda Pramāna or the authority of a relia
i.e., an expert or specialist, constitutes the
securing knowledge of things, not ascertaina
foregoing two methods by men of average in
A reliable person i.e., an expert or a specialist
described as a person who ascertains facts or
of strong and irrefutable evidence and proof
he states a fact exactly as he sees it, then the
is valid testimony. "Valid testimony cons
master minds and revelation."[1]

---

1. [illegible] Kusuma
[illegible] (Commentary)

ding to *Charaka* the authorities are: "Men freed themselves from passion and ignorance of spiritual endeavour and knowledge; whose ding embracing the past, present and future, d at all times unclouded. It is these that are ities, the learned, and the enlightened. Their nimpeachable and true." Charaka queries, l such men, devoid as they are of passion and give expression to untruth?"[1]

the *Aptas* can be any one, and they need not belong to a particular country, religion, community, will become obvious from the citation from the *Nyāya Bhāshya*:

[illegible] (Nyaya Bhashya)

he Doctrine of Parinama or Evolution

e proceeding to the study of the *Sāmkhya* of *Parināma* or Evolution, we may perhaps here, their *Schema* (vide page 34) which at a ks to furnish an almost total idea of the con-teps in the process of evolution of the Universe. na deserves our diligent consideration, because s the answer to the riddle of the relationship he (so-called) non-living matter, and the er and the emergence of the latter from the ich in the case of certain forms—the so called

[illegible]

(Charaka, Sutra 11; 18-19)

higher forms—exhibit peculiar characte
as consciousness, intelligence, memor
of the will etc., not obvious in the low
life, and certainly not in the non-liv
In the same way, a careful and critical s
schema is sure to point the way for the h
of the non-vital physical, the vital biolog
dynamic psychological phenomena, whic
treated as three distinctly different fields of

We have already noted the attempts mu
tion of biologists to explain the phenomen
as '*vital forces*', and by psychologists, the m
menon with the help of the laws of physics. T
schema, it will be seen, provides the niches
these apparently distinct and different phen
fitted in aptly, to furnish an almost comple
a process made up of consecutive steps, eac
senting a stage of evolution, moving towar
goal, to achieve a definite purpose.

The Fundamental Postulate.

The fundamental postulate on which
schema is based, is that the "Primal Nat
evolute; *Mahat* etc., the seven are evolve
lutes; the group of sixteen is evolute;
neither an evolute nor an evolvent."[1]

The Primal Nature i.e., the *Mūla Pr*
also as the *Pradhāna* is so-called because it
of the seven evolvents and evolutes; the Pr

1. मूलप्रकृतिरविकृतिर्महदाद्याः प्रकृतिविकृतयः सप्त।
षोडशकस्तु विकारो न प्रकृतिर्न विकृतिः पुरुषः ॥
(Kārika III)

is the origin and a non-product, is an evolvent.
ot produced by anything, therefore, Nature
an evolute of anything"[1]

hat etc., the seven are evolvents and evolutes.
intellection. *Buddhi* or intellect and the rest
viz., *Buddhi* or intellect, *Ahamkāra* or Ego and
anmātrās. They are seven evolvents, and evo-
intellect is produced from *Mula Prakriti* (Pri-
re), therefore, it is the product of Nature—
e. The same intellect produces Ego and is,
an evolvent. Ego also, being produced from
is an evolute, and it is an evolvent as it produces
anmātrās. The *Sabda Tanmātra* being produced
is an evolute; and it is the evolvent as it
Akāsc (Ether?). Similarly, the *Sparsa*
a being produced from Ego is an evolute; and
evolvent as it produces *Prithai*; the *Rūpa*
a being produced from Ego is an evolute, and
volvent as it produces light. The *Rasa Tanmātra*
oduced from Ego, is an evolute and it is an
as it produces *Ap*. Thus *Mahat* etc., the seven
ents and evolutes."

he group of sixteen is evolute. The five organs
the five organs of action, the eleventh mind
five gross elements, the group of sixteen is only

ne *Atma* is neither an evolvent nor an evolute."
g up the above postulate :

---

[1] [illegible] | [illegible] | [illegible]
[illegible] | [illegible] | [illegible]

[Gowdapada]

"The root matter i.e., *Mula Prakriti* tion. It is the root cause of all matte or *Buddhi*) and the rest are the evolu Intellect which is the product of *Ma* ces Ego [*Ahamkara*]. Ego born of the five *Tanmatras* and the organs of The five *Tanmatras* which are produ duce the five gross elements or *Bhuta* elements and the eleven organs are, t only. The *Atma* is neither produced itself produces anything; so it is neit an evolvent. Among these, *Mulap* has been termed as the Unmanifest or is the knower, and the rest are Manif In its primordial state *Prakriti* is for tinted, unlimited, ubiquitous, indest ing and without a beginning or an *Sankhya*. The non-apprehension to its minuteness and not to its n existence is ascertained from its effect the rest and they are similar and dissi

rdial state, *Prakriti* is formless, un-
d unlimited. It is a component of
rimordial state—the components being
rmed as *Gunas* (predicaments)
ma, *Rajas* and *Tamas*. Things of
stated to arise out of the transfor-
s that take place in the primordial
Prakriti.

al matter or *Mula Prakriti* is marked
rmanence. Every thing else is potential
The *Sankhya Karika* postulates here
he Conservation of Matter, which was
olsier later in Europe in 1774

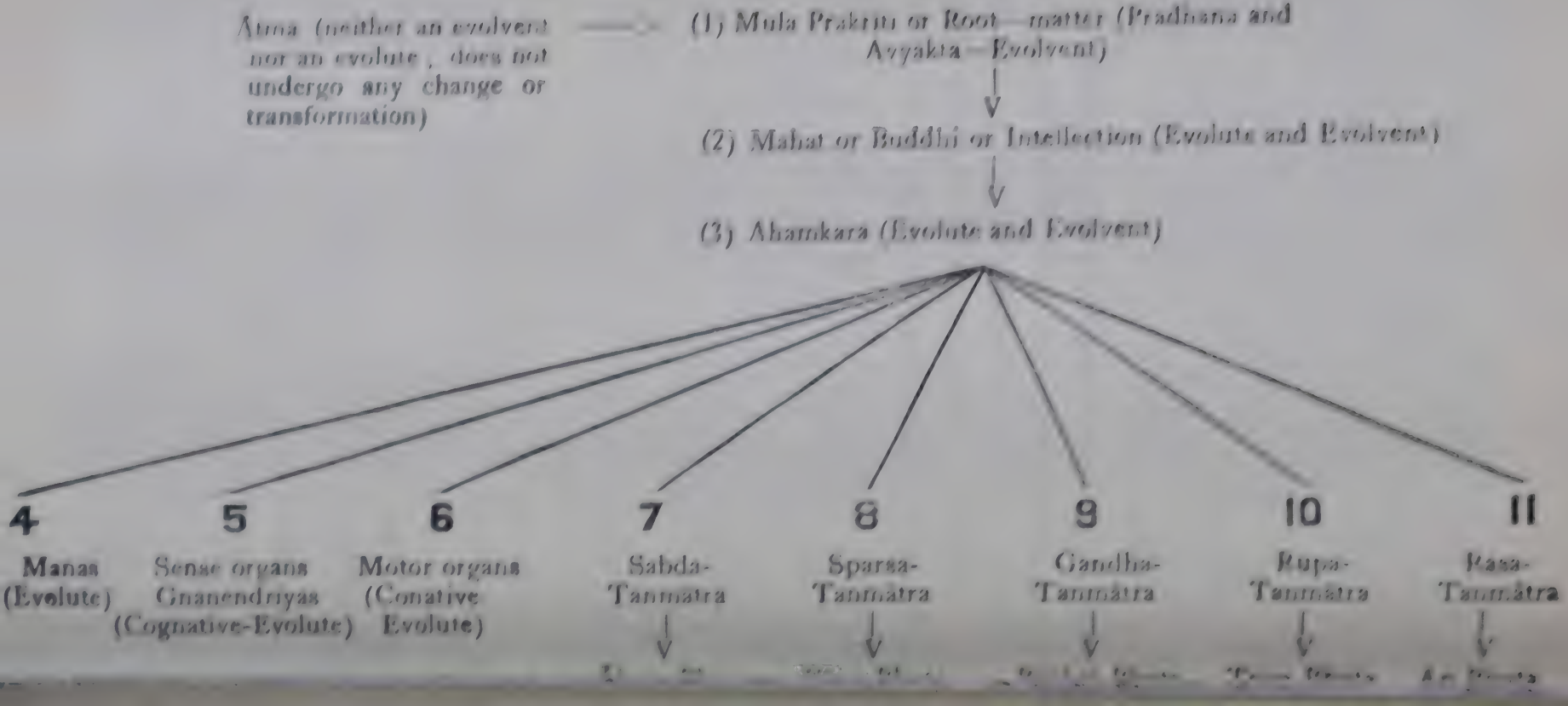
e note that, according to the *Sankhya*
ire Universe is stated to have evolved
ested i.e., *Avyakta*, ground-substance
rakriti which is also known as *Pradhana*
es of *Mula Prakriti* are :

tter—pure and simple ;
created or uncaused ;
an evolute ; and,
basis of the evolution of other forms
therefore, an evolvent. The *Karika*
principle of Conservation of Matter
to above as follows :

is existent (in its cause), since the non-
be produced ; since everything cannot

patterns', is meant the Guna trend. Each Guna
bounds a pattern of events which gradually become
with the consecutive phases of the evolutionary process
on page 35).

Schematic Representation of Kapila Samkhya Doctrine of Evolution.



e produced from anything, since a potent cause pro-uces that of which it is capable, and since effect is of he same nature as the cause."[1]

This principle, therefore, forms the basis of the doctrine of evolution i.e., *Parināma Vāda* of the *Sām-khya* system. The *Mula Prakriti* or the primordial matter cannot be seen but can only be inferred. This inference is stated to be based upon reflection in medi-tation and *Anumāna* or rationalistic explanation, rather than *Sabda Pramāna*.

If the primordial matter or *Mūla Prakriti* is an un-caused evolvent and is characterized by the attributes mentioned above, the evolutes arising out of them i.e., those that are spoken of as *Vyakta* or the manifest are stated to be "caused, non-eternal, non-pervading, active, manifold, dependent, mergent, conjunct and subordinate." The unmanifest or *Mūla Prakriti*, on the other hand, is just the reverse.

It was stated above that the *Mūla Prakriti* has been conceived as a component of patterns. This allusion refers to the three *Gunās* viz., *Satva*, *Rajas* and *Tamas* by which, the matter in its primordial state has been understood and described. By the term *Guna* is under-stood the inseparable predicament.

The same applies to *Vyakta* or the evolutes also. In addition, both *Prakriti* and its evolutes are non-descriminated, objective, general, non-intelligent

1. असदकरणादुपादानग्रहणात्, सर्वसम्भवाभावात्।
शक्तस्य शक्यकरणात्, कारणभावाच्च, सत्कार्यम्। (Karika IX)

and productive. The *Atma* i.e., *Purusha* is the rev... of these, as well as similar.[1]

Stated in general, *Satva* is signified by what... is pure, fine and illuminating; *Rajas* is signified ... whatever is active and energetic, activating, and *Ta*... is signified by whatever is passive and offers resist... and restrains.

Considered from the point of view of the mind... the subject or the experiencing mind, *Satva* is infe... as pleasure, *Rajas* as pain and *Tamas* as bewilderm... or *Moha*, i.e., delusion. "The *Gunas* are of the na... of pleasure, pain and delusion and are adapted to i... minate, activate and restrain. They mutually supp... support, produce, consort and exist."[2]

Satva is the essence which manifests itself ... phenomenon and is characterised by a tendency ... manifest. It serves as a medium for the reflec... of intelligence.

Rajas is the energy which is efficient in the ph... menon and is characterised by a tendency to do w... or overcome resistance.

Tamas is the mass or inertia which counte... the tendency of *Rajas* or energy to do work ... *Satva* of conscious manifestation.

The ultimate factors of the Universe are then:

i. Essence or intelligence-stuff;
ii. Energy, and.
iii. Matter characterised by mass or inertia.

1. ... = पुरुष: (Karika XI)

2. ... पुरुष: (Karika XII)

The three components of pattern of *Prakriti* — the *Gunas* and their interaction.

The *Triguna*s are permanent features or reals, and ey are not independent i.e., *Pradhana*. They repre- nt inter-dependent *moments* in all permanent states existence. Even energy, in this view, connotes a rmanency. Its infinitesimals do not possess iner- and *Gurutva* (gravity). They therefore, appear as *n-material*' in a general sense, but possess *Parimana* or antum and *Parichinnatva* or extensivity. The nature *Rajas* or energy is to work, overcome resistance and oduce motion. Thus, all forms of energy are essentially netic. Even the potential energy held in the mass or *nudbhuta vritti sakti* represents an imperceptible form motion.

It will be seen from the foregoing that every mani- station in phenomena is founded on a threefold basis:

i. *Satva* or intelligence i.e., Essence,
ii. *Rajas* or energy in motion, and
iii. *Tamas* or mass.

Satva is the essence of things by which they (the ings) manifest or make themselves known to Intelligence *Atma*. Nothing can exist in the Universe of con- iousness without such a manifestation.

But then, *Satva* is only one of the three compo- nts of pattern and it represents one of the three *cments*. It neither possesses mass and *Gurutva*, nor fers resistance, or performs work by itself.

Tamas on the other hand, is mass, inertia and the tter-stuff, which offers resistance to motion and con- ous reflection.

From the above description of the *Triguna*s or the ree components of pattern of *Prakriti*, it will be seen

1. [illegible]

that both *Satva* and *Tamas* are by themselves inca able of performing any work and they do not posse productivity. The various functions attributed to the are made possible by *Rajas* or energy only, which the one hand overcomes resistance, and supplies ener on the other. *Satva* needs the help of energy to enal conscious regulation and adaptation.[1]

The *Trigunās* or the three components of patte of the *Prakriti* unite, separate and reunite. The thin of the Universe evolve on account of this peculiar pr perty of the *Trigunās* i.e., their capacity to combi separate and recombine in various modes of formatio and groupings. They react and interact with each oth and are inter-dependent. It is due to this peculiar featu of the *Trigunās* that the evolution of the definite fr the indefinite, and qualitatively determinate takes plac It has, however, been pointed out that even though th three components of pattern interact with one anoth to cause the diversity of effects which characterize t things of the Universe, yet, they do not coalesce w one another among themselves.

The energy present in the multiplicity of dive things in the phenomenal Universe is entirely due *Rajas*; resistance and stability are due to *Tamas* or t matter-stuff and every conscious manifestation *Satva*.[3] The nature of the interaction of the th

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1. [illegible]

[Lokacharya, Tatwatraya, Achitprakar

2. एते गुणाः परस्परोपरक्तप्रविभागाः [illegible] मूर्तयः। (Vyasa Bhashya)

3. [illegible] (Ibid.), [illegible] (Vignan Bhiks Yogavartika on Vyasa Bhashya). [illegible] (Vachas Tatwavaisaradi on Vyasa Bhashya).

omponents of pattern presents, rather a peculiar icture. The constituents of *Prakriti* are, to begin with, a state of equilibrium. This marks the phase of quiscence or inactivity (refractory state) of *Mūla Prakriti*. n evolution pre-supposes the disturbance of the uiescent phase and the equilibrium of the three comonents of pattern, so as to effect the transformation of he energy; make for the preponderance of either energy r mass-resistance or essence as the case may be, over he other *moments of* patterns. In any phenomenon the particular pattern which happens to preponderate over he rest, becomes manifest and the rest remain sublatent. The presence of the latter is deduced from their effects. This can be summed up as follows: "In any material system at rest, Mass is patent, Energy latent and conscious manifestation sublatent."[1] In the case of a moving body on the other hand, *Rajas* or energy is a dominant feature and the resistance of *Tamas* or mass (inertia) is overcome. The transformation of energy or *Rajās* proceeds hand in glove with the predominance of *Satva*, and in such cases, volitional consciousness accompanies the movement of energy or *Rajas* in phenomena where the former is predominant. Resistance of *Tamas* in such a phenomenon is deduced to be overcome.[2]

The pre-evolution phase :–The evolution or *Parināma* is preceded by a period of quiescence i.e., a period of nactivity and the equilibrium in which the *Trigunās* are in a state of uniformal diffusion. This state is

1. B. N. Seal; "The Positive Sciences of the Ancient Hindus", P. 5
2. प्रधानवेलायां उपदर्शनसन्निधाना गुणवेऽपि च व्यापारजनेन प्रधानजन्मनुद्भिन्न स्तिता: । (Vyasa Bhashya)

marked by the striking of a balance between th
forces i.e., the inherent property of the *Sa*
manifest and *Rajas* to work, are counter-balan
the resistance offered by *Tamas*, i.e., inertia an
All progressive or forward movements in this ph
held in a state of abeyance.[1]

The first phase of evolution :—The quiescent
Prakriti is brought to an end by the impact
Purusha or *Atma* on *Prakriti* which disturbs the
brium maintained hitherto between the three
The uniform diffusion of these *Gunas* are now in
of chaotic vibration and this marks the begin
formative combinations among them, leading t
uctive activity.[2]

The formation of systems or the coming toge
Trigunas :—The disturbance of the equilibrium
Prakriti referred to above leading to creative
formations, together with the evolution of mo
Paripanda and the work done by *Rajas* or
takes place on account of the coming together
aggregation of the *Trigunas* in a peculiar way
formation of systems i.e., *Samadhya*, presum
preponderance of one *Guna* over the rest, lead
an unequal aggregation, which upsets the

1. साम्यावस्थात्मिका सा प्रकृतिः ।
(Pravachana Sutra: 61, Chap. I)
साम्यावस्था सत्त्वादिगुणानां प्रकृतिशब्दवाच्या भवति
विक्षेपः । (Vijnana Bhikshu—Ibid)
2. [illegible]
(Vijnana Bhikshu, Pravachana Bhashya, Chapter I,
[illegible]
स्वादेना बुद्धेरुत्पादेव च मुख्यम्
(Ibid : Sutra 128, Chapter I)

rium. This follows on the principle that for
ruction and maintenance of wholes or systems,
l forces or stresses are necessary to their differen

mrishta Viveka or differentiation in integration
ma or evolution in its essential aspects is defined
differentiation in the integrated or *Samrishta*
The process of evolution comprises of the
gment of the *Vaishamya* (differentiated) within
nyakarcha (undifferentiated); of the *Visesha* (deter-
e) from the *Avisesha* (indeterminate), and of the
viddha (coherent) from *Ayutasiddha* (incoherent).
consecutive steps of evolution is controlled by a
ite law—*Parinama krama niyama*—which is not
reased.
The order of the development of the steps in the
ion takes place neither from the whole to the
or from the part to the whole, but always from
elatively less determinate, less differentiated, less
ent whole to a relatively more determinate, more
entiated and more coherent whole.
The process of differentiation in the integrated
ets out of the homogeneity separate and unrelated
—which again unite to form a whole. This process
s itself by further differentiation into isolated
leading again to combination. This kind of separa-
and integration repeats at every stage within the
g whole. Thus, the twofold process result in an
ion of what was originally a homogeneity or *Ayuta*
(incoherent), and *Avisesha* (indeterminate), into

[illegible]

a homogeneous whole of *Vastusiddha Vastu* (determinate).

The consecutive steps of evolution i
details of the consecutive evolutionary s
are characterised as hereunder. The
preceded by the resting phase of the u
inconcievable *Prakriti* in which the *T*
state of equilibrium. Its character in t
be described i.e., *Alinga*.

The first step:- This step is marked by the
on the *Prakriti* which causes a di
equilibrium of the *Triguṇas*.

The second step:—This is followed by
within the whole i.e., *Prakriti*,
which is the first outcome of the
sṛishṭa-vyoma. In other words, th
pirical Universe, the formless co
experience, matter-stuff of consc
—which is the essence of the cos
of an orderly systematic whole).
differentiation and integration wi
less, characterless and inconce
form. This is *Mahat* or *Buddhi*

The third step:—The process of *Sa*
proceeds further within the whole
individuated, when it is known
Ego. It bifurcates into two series,
series and (b) object series. This st
Avyaktha or indeterminate unity o
or what is known as the exp
Ahamkāra—the principle that c

1. Appearance in the mind's perception of itself
as of ordinary consciousness accompanied by self-

ect series—*Aimita*—on the one hand, and the *esha* (indeterminate) material potencies i.e., le (or *Sūkshma*) carrier or vehicle of potential gy—*Tanmātra* or *Sūkshma Bhūtāi*—the nate fine constituents of the material or nomenal world, on the other. Briefly stated, *at* evolves within itself as an individuated, t still indeterminate stuff (*Aviseha*) by the ess of *Samirishta viveka*. This process ken a step further when it bifurcates into two rdinated series in two directions—the subject object series.

step :—Now arises the determinate stuff i.e., *eha*, evolved within the indeterminate—*seha*-by further differentiation and integration in the subject series—the sensory and motor f. On the object side, the corresponding mic matter-stuff in which material potencies of cific patterns of sensible energies become ualised. The latter comprehends different ses of *Parāmānūi*—the various kinds of atomic stituents of the gross matter or *Stūlabhūtāi*.

tep :—*Yutasiddha* or coherent and integrated tter-stuff-individual substances-characterised generic and specific properties-which are not dly fixed but are fluent and subject to eefold changes and constantly evolving, arise this step.[1]

. the cosmic series moves on in ascending unstable equilibrium—*Visadrisa Parināma*—verse course of equilibrium and dissipation *Sadrisa Parināma* and *Sāmyavastha*-which still

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[1] [illegible]
[2] [illegible]
[3] [illegible]

follows the evolution and transform
constantly completes the retrocession
back to its original unmanifested primo
able *Prakriti*

The steps of Parinâma in detail as
Vyasa Bhashya

Prakriti (the unmanifested, unknow

Mahat (Cosmic matter of exp

Subject series
(Individuated, indetermi-
nate mind-stuff

Determinate mind-stuff

Sensory, motor and
mind-stuff

(Individuated substan
and specific charac
constant change
inorganic objects
atoms or molecules
Vegetable organis
animal organisms

Puruṣa or Ātma

eady noted that the *Sāṁkhya* system
existence of a principle standing for
gence known as the *Ātma* or *Puruṣa*, in
f evolution and characterized it as the
ngeable and neither an evolvum nor an
principle has been stated to represent
causes. Between them, the *Ātma* and
ute the two uncaused causes. Their
nion has been stated to lead to the
the inanimate and the animate of the

teristics of *Puruṣa* it was noted, are both
similar to *Prakṛti*, as detailed hereunder:

een Puruṣa on the one hand and Vyakta
kta on the other i.e., Dissimilarities.

Puruṣa	*Vyakta and Avyakta*
a [1]	Triguṇa [7]
i [2]	Aviveki [8]
haya [3]	Viṣhaya [9]
khya [4]	Sāmānya [10]
na [5]	Acheṭana [11]
avadharmi [6]	Prasavadharmi [12]

1. Non-composite; 2. Intelligent; 3. Not swift or slow; 4. Knower; 5. Non-productive; 6. Not changing or predicament-bound; 7. Unintelligent; 8. Object; 9. Not knowable; 10. Inanimate; 11. Productive.

Similarities between Purusha and Avyakta and dissimilarities between the latter

Vyakta	Avyakta	P
Hethumath [1]	Ahethumath [10]	Ahe
Anitya [2]	Nitya [11]	Nity
Avyâpi [3]	Vyâpi [12]	Vyâpi
Sakriya [4]	Nishkriya [13]	Nish
Aneka [5]	Eka [14]	Ane
Asrita [6]	Anâsrita [15]	Anâ
Linga [7]	Alinga [16]	Alir
Sâvayava [8]	Niravayava [17]	Nir
Paratantra [9]	Swatantra [18]	Swa

Avyakta is an immaterial or a non-mat which is independent of and contemporan exist. It is the cause and the controller of There is no evolution without its presence The *Sânkhya* holds that there is a multipl They are the *Sâkshis* or witnesses who po the *Prakriti*. If the *Prakriti* has been ch *Achetana*, then *Purushas* are *Chetanas*. Th the matter is due to the presence in it o It is endowed with perception and activi the agent of the activities. It imparts inte matter.

Being formless though intelligent, work by itself i.e., *Nishkriya*, and in th compared to a lame man. *Prakriti* on the non-intelligent and blind. In this c

1. That which arises out of an antecedent cause; 2. Non-permanent; 3. Capable of the pas 4. Momentary; 5. Dependent; 6. Distinguishing mar parts; 8. Subordinate; 9. Unconscious; 10. Eternal; Permanent; 12. Simple; 13. Indestructible; 14. Eter 16. Independent.

y activity. It is compared to a strong and
t a blind and unintelligent person. The
and *Prakriti* is compared to the riding by
ntelligent person on an unintelligent and
-bodied person. This classical simile is
Pangvandha Nyāya.

played by the *Purusha* in the evolution of
be compared to the part played by a
emical reaction i.e., "a substance which
n comparatively small proportion, influ-
ed of chemical reactions without itself
in quantity or chemical composition."
be the shortcomings of this analogy, the
catalyst illustrates in part, the role of
he evolutionary process now under

ulate of the *Sāmkhya* that the *Purusha*
s the process of evolution, but also con-
resent unchanged throughout the process—
olvents as well as in the evolutes. This
serves careful consideration. For, the
this view even as a hypothesis will mean
s of evolution observed at biological level is
sion of the process that has been going on all
physical level. It follows from this that
of as life, consciousness, intelligence and
uted to certain forms of life are not an
n erratic phenomenon, but is only the
' vital properties which were in a potential
less evolved forms of life and in the so-
-matter that composes the material-stuff of
'protoplasm' viz., the atoms, atomic particles

the mass and energy etc. In other
implications of the *Sāṁkhya* view we
bears a close resemblance to some of th
in science which, as stated by Whitehead
purely *physical* not purely biological. It
study of organisms. Biology is the
larger organisms; whereas physics is
the smaller organisms. The organism
includes as ingredients the smaller
physics; but there is at present no
the smaller of the physical organisms
lysed into component organisms. It may
how we are faced with the question as t
are not primary organisms which are
ther analysis. It seems very unlikely th
be any infinite regress in nature. Accor
of science which discards materialism
question as to the character of these p
There can be only one answer on this h
start with the *event* (*dharma mātra*) as th
of natural occurrence. An *event* (*dha*
do with all that there is, and in particula
events (*dharma mātra*). This interfusion
mātra) is effected by the aspects of those
such as relations, *samāsa*, *samsarga*, geometr
which are required for nature and are
from it. Such an eternal object will b
of one *event* (*dharma mātra*) under the guis
qualifying another *event* (*dharma mātra*).
procity of aspects and they are pure
Each *event* (*dharma mātra*) corresponds
patterns, namely, the pattern of aspects

which it grasps into its own unity, and the
aspects which other events (*italics mine*)
p into their unities."[1]

ámkhya doctrine we may perhaps find a
at present offers a coherent and plausible
f the great riddle of the emergence of the
he non-living; the animate from the inani-
anic from the inorganic and the conscious
onscious. It floodlights the region of the
holds the truth between the two states—
nd the biological (including the mental).

**of the Conservation of Energy (and of Mass)
and Transformation of Energy**

ire process of evolution and retrocession
the *Sámkhya* is based on the principle of
ion of Energy (Mass) and its transforma-
principle was referred to earlier elsewhere
portance and value will become clear,
e have gone through the process of
Parináma as described by the *Sámkhyas*
of this study, we may now proceed to
octrine as a positive concept.

guńas, visualised as the three components
ch assume numerous and diverse forms and
either be created nor destroyed. This
unt both the manifested and the unmani-
otential and the actual. The total amount
d *Rajas* corresponding to Mass and
ectively remain constant, the individual

1. "Science and the Modern World", Chapter VI, p. 124.

products which may arise during the course of the evolutionary process notwithstanding. The concrete forms that arise as a result of the integrated action of the original mass, energy and essence may be subject to addition, subtraction, growth and decay. These are the outcome of the changes in the way or the mode of their combination and the changes that arise from their transformation from the potential to the actual and *vice versa*. The diverse ways of the combination of Mass and Energy are productive of different kinds and heterogeneity of substances possessing various kinds of of powers. These can be classified, as similars and dissimilars, etc.

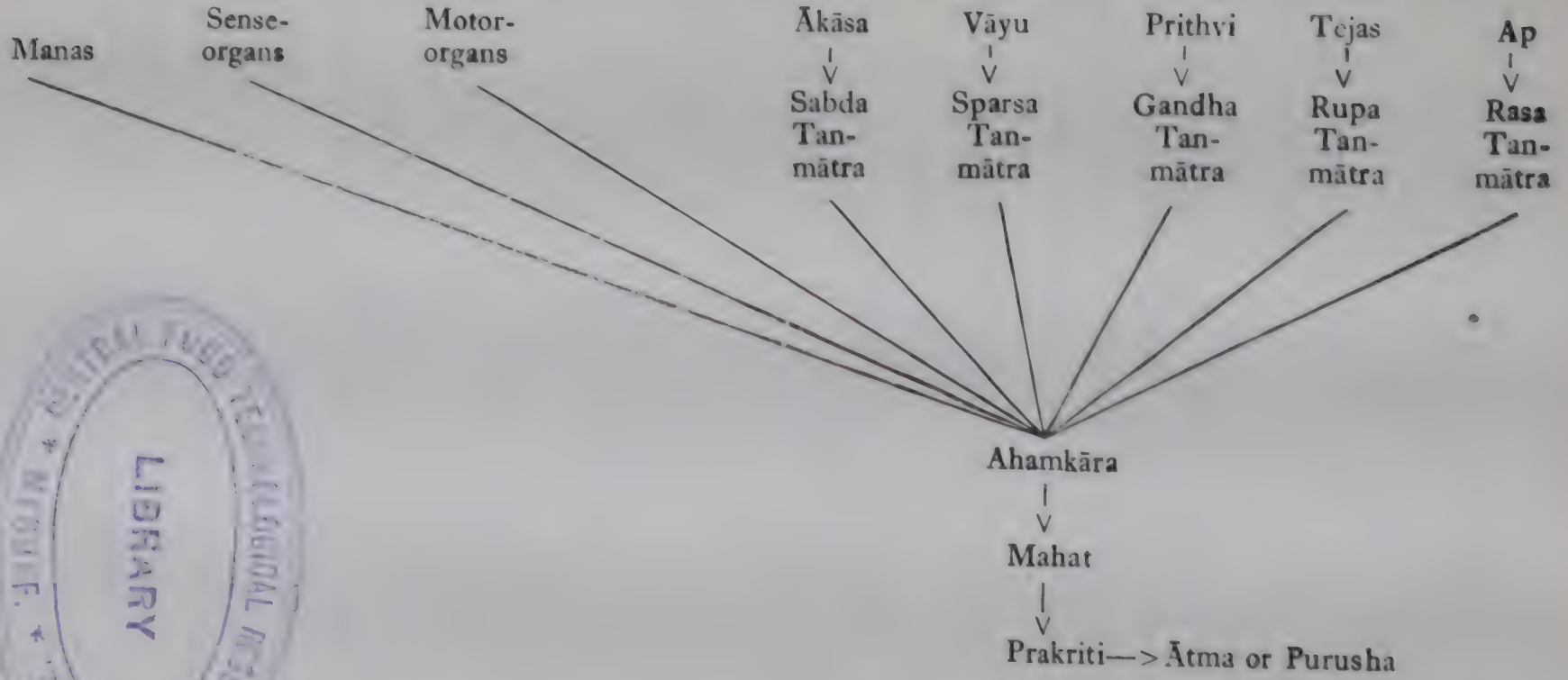
The course of evolution from the three Reals or *Tattvās* in every aspect obey a well defined law, not only in respect of the order of the succession of *events*, but also in respect of their form, appearance, mutual relations, similarities and dissimilarities, affinities and antagonisms of energies. This process of change and transformation is proceeding continuously—the quantity of the primary components remaining the same all through.[1]

Pralaya or Dissolution and Retrocession.

The *Sāmkhya* doctrine holds that every cycle of evolution—*Srishti* and *Parināma* — is concluded o

1. गुणास्तु सर्वथा नुपातिनः न प्रत्यस्तमयन्ते नोपजायन्ते व्यक्तिभेदेष्व [illegible] गमवर्तीभि: गुणवृत्तिभेदाभि: उपजनापायधर्मका इव प्रत्यवभासन्ते। (Vyasa Bhashya, Sutra, 1 Pada II). परिणामैक्यानुपातिनां गुणानाम्। सर्वभेदः गुणानां सन्निवेशविशेषमात्रम्। (Ibid. Sutr 3. Pada IV) [illegible] गुणाः तुल्यजातीयाजुल्यजातीयशक्तिभेदानुपातिनः (Ibid, Sutra 1 Pada II). परिणामैकतानियमात्। (Ibid, Sutra 19, Pada II) कृतान्यपत्य परिणामान्वयतो हेतुः। (Patanjala Sutra, 15. Pada III) प्रकृतेः परिणामशीला क्षणान्यपरिणाम्य नावतिष्ठते

THE SCHEMA OF PRALAYA OR RETROCESSION



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brought to an end by the process o
represents dissolution and retrocession
seen that the evolutes are withdrawn
with the corresponding evolvents, ste
reverse direction, till the stage of *A*
when the *Atma* separates itself fr
the latter attains the state of equilib
at the commencement. The two proce
and retrocession are both dynamic and
by the inexorable *Parinama Krama N*
of Conservation and Transformation o

The Sāmkhya Doctrine of Causali
Kārya Niyama.

The Sāmkhya doctrine of causali
Kārya Niyama is implicit in and based
the conservation, change and transfo
(mass). In it are also implicit thei
(Kāla) and Space (*Dik*). It was no
amount of energy (mass) is a constant
same throughout the different phases
evolution. In other words, while the
remains the same, the Universe is in a
flux of evolutionary movements. Th
i.e., evolution, and the effect or *Kary*
are the issues of the same ultimate

Whatever change or transformati
only to promptings and impulses of
result in the manifestation of the
potential state in the three patterns o
new, which was not already implicit
arise.

al cause or the sum of material causes,
r which is efficient in the production or
the vehicle of power. This power is
d or potential form of energy set free—
in the effect.

nt or *Sahakāri* conditions are necessary
et free the material cause or the effect
m into activity. Manifestation is not
not take place in the absence of the
Sahakāri conditions. This power is the
e., the potential form of the energy set
ritti) in the effect. The presence of the
concomitant condition is necessary for
In the absence of the *Sahakāri*, or
ropriate for the release of energy, no
an ever take place.

id given by the concomitant factor deter-
uction or the determination of the effect
potency in the material cause, is answered
positions, viz., that of the mechanistic
d by the very familiar example of the
of the figure of a statue in a block of
he causal efficiency of the sculptor's art,
tion of oil from *Tila*, or of grains of
by the husking of the latter. Though
and crude, these examples have been
vice to illustrate the principle that the
n effect is only its passage from potentiality
stage in the process of Parināma from a
xistence to actual present existence. The
ondition known as *Sahakāri Sakti* or
a i.e., the efficient cause, is exemplified

by chiselling, pressing, husking and mechanical or instrumental help to transition.[1]

The examples of mechanical princ from the *Kapila Sāmkhya* are simple illustrate the idea of causation adeq easy way. The *Pātanjalā Sāmkhya* o does not go by such examples. Th causation of this system is based on the conservation of energy, which is po of potential energy stored up in the G i.e., the sum of material causes, and th follows on the action of the proxim comitant condition i.e., *Nimitta Kāra*

The value of *Nimitta Kārana* or dition lies in the supply of the require which releases the stored up potentia group of combination. It is wort connection that, all things in the phe nothing but special modes of collocati mate reals or the components of pat energy and the mass. The sum of ma tially contain the energy released as The concomitant causes or *Nimitta K* forward in the evolutionary series. effective stimulus and renders wh indeterminate, now determinate.

1. [illegible] (Yogasara Bhashya, Pratachana Bhashya, Sutra 115. [illegible] (Ibid, Sutra 119, Chap. I)

Kārana to the sum of material condi-
en grouping results in the imparting of
This brings to an end the arrest and the
le state of equilibrium, and results in
n of energy i.e., *Udbhita vritti sakti*,
a fresh combination.[1]

d order in the chain of causation

er of evolution with the transformation of
ws a definite law. The unalterable
se and effect in the phenomenal world
s fixed order. Though the cosmic order
ed, it comprehends diversities arising out
combinations of the original patterns or
constitute the subordinate or particular
and effect.[2]

e spoken of as the qualities of things are
f energy acting in such collocations.[3]

[Ibid, Sutra 3 Pada IV]

[Contd. in the next page]

The different kinds of energies are sometir
and sometimes potential rising to actuality.
times subsides from actuality to sublatency
the original energy is one and (a continuum i
and everything, therefore, exists in every
सर्वसर्वात्मकत्वसिद्धि।) without prejudice to the generic
fic difference of things, (अन्यथाभेदेन सांकर्यसिद्धिरूपम्).
matter, vegetable and animal organisms a
tially and ultimately one[1] in so far as
energy are concerned, but the varied forms of
specific generic qualities or properties of thi
are but modes of energy, follow an unalterab
the order of their appearance and successi
conditions of Space, Time, Mode and Cau
hence all effects do not manifest themselves a

Kāla or Time and Dik or Space

The *Sāmkhya Patanjala* system does
Time i.e., *Kāla*, as an entity belonging to a fu
category, substance or form, as does the *Nyāy*
system. Their concept of Time signifies a

---

we find the relations of mass and energy inverted, so that mass
the name for a quantity of energy considered in relation to cer
mical effects. This train of thought leads to the notion of en
tomical, thus displacing matter from that position. But it
the name for the quantitative aspect of structure of happeni
is opposite to the notion of the functioning of an organism".
[Whitehead : Science & The Modern World, Ch

1. सत्यमूलत्वात् सांसिद्धिकानां प्रत्ययानां प्रामाण्यं लोके प्रसिद्धं यथा आप्तागमा
आप्तेषु। [Vyasa Bhashya]

2. विशेषाप्रतिपत्तौ च नैकं सामान्यम्। Sutra 14, Pada III, दो तत्व समान नहीं हो सकते। जिन
आधार हमें दीखता है। [Ibid, Sutra 15, Pada III]

phase or state of a system to another and lays
the passage of states of a dynamical system
y, therefore, the *Sāmkhya* theory of Time
ptions of change associated with transforma-
luence and motion. It comprehends changes
n, of qualities, of sensation and in fact, dis-
s of different kinds at the macroscopic,
ic and galactic levels in which Time is sensed.
ds on the basis that it is because of the
nd *concept* that we become aware of the
The Time of our laboratory, known and
by the relative motions of bodies, the Time
enjoyed by our sense of succession of
ave a common tract, the succession of relative
bodies or phases of *transient situations* and
e should not lose sight of the fact that the
world about us at any level of investigation is
through the relative motions of matter and
nation of energy.

Sāmkhya Patanjala school, it was noted, treats the
iverse as a system, a process and in a word, an
. By whatever term we may signify it—system,
r organism—this concept stands for a physical
an aggregate of entities characterised by the
of a number of parameters—finite or infinite—
hich is subject to variation, which serves to
nd designate the states of the system in its
or evolution. A system, in this view, is
if its *Parimāna* or dimension is finite, and
Parimāna Sāmkhya or dimension number is
der of the continuum.

An analysis of the concept of *Kāla* or Time, in ter of generic traits, common to all kinds of dynam systems, takes into account the existence of such dim sional levels of structure, as are exemplified in macroscopic (*Sthūla*), microscopic (*Sūkshma*) and gal tic regions of nature. It also takes into account inimitable attributes (*Gunās*) of our everyday perc tion through which we become aware of char movements, energy transformations and in short, *events*.

In the view of the *Sāmkhya Patanjala* syst *Kāla* or Time is within Nature. Each entity has own Time and Space. It considers that even tho *Kāla* is not a fundamental parameter—a primordial s stance or stuff of which the existents are constituted is not necessarily void of contents. It is not conside to be exclusively qualitative to be treated as concr and actual in the experimental sense of being inte to actual transformations and changes. It is also viewed as a mere empty continuum, devoid of existence, divorced from natural dynamic syste *Events*, in this view, do not occur in Time, if by latter is meant an absolute continuum of *instants Kshanās* existing apart from actual events as t occur, in some manner releasing moieties of its bein be strangely and inexplicably welded to the happeni of nature in order to date them to suit our convenie Time, therefore, is within nature and not converse it does not extend outside natural occurrences.

Each entity is its own Space and its own refere system. When displaced, this entity creates its

ial locus or *Desa* in interaction with others. Each ty and process has its own Space (*Desa*) and its own ie (*Kāla*). Both Space and Time are cogredient[1] coextensive with actual entities and processes.

The theory of Time and Space reviewed above in f has been succinctly described by *Vyāsa Bhāshya Yoga Sutrās*,, which is as follows:

The *Sāmkhya Patanjala* system considers *Kāla* and (corresponding to Time and Space) as a product of understanding. They arise in our mind as a result the relative position occupied by *Tanmatrās* during ir motion or transit in Time, Space and Causal ies. A *Tanmātra*, as will be studied later, is a constituent an atom or *Anu*. It is a particle of matter charged with pecific kind of energy or a quanta of specific energy. e position of *Tanmātrās* referred to above, are both and outside of the atomic space.

A *Tanmātra*, it is stated, is conceived by our understanding, to stand in three relations viz.,

1. कालावच्छिन्न or position in Time series
2. देशावच्छिन्न or position in Space
3. निमित्तावच्छिन्न or position in the causal series.

These three relations are stated to arise in our uition or *Nirvichāra Nirvikalpa Prajna* (opposed to

1. The term 'Cogredient' relates to actual transformations and displacements. A temporal extension is said to be cogredient to a particular displacement, if it has no objective existence apart from that displacement Cogredient temporal extension is thus one integral to an actual transformation

Savichāra Savikalpa Prajna or conceptual intuit
This intuition is of the type that imposes its form
the empirical substrate.[1]

Taking *Kāla* or Time into consideration first,
stated that it is objectively a non-entity and is or
construction of our understanding i.e., *Buddhi Nirm*
which is based on the relation of antecedence or *I*
and subsequence or *Bhavishyat* in which, the 'thing'
natural phenomenon is experienced to occur.
relationship is understood by our consciousness to
in a series, viz. that which took place, that which is
ing place, that which is yet to take place. It is, there
understood as order in Time or *Kāla*. The Time s
is, therefore, a scheme of our understanding to r
sent the course of evolution which appears as an obj
reality, creating the impression of a continuum.

A *Kshana* or moment has been conceived
ultimate irreducible unit of Time which is in
sible. It is not composed of parts standing in rel
to *Bhūta* or antecedence and *Bhavishyat* or subsequ
The Time series represent only a change. A *Ks*
or a moment, therefore, stands for a unit of change

All physical changes can be reduced to the m
or movement of *Anūs* or atoms (or their *Tanma*
in Space. The *Kshana* or moment is, there
defined as the moment representing the ultimate u
change i.e., the instantaneous transit of a *Tanmātra*
one point in Space to the next succeeding point.

1. तत्र भूतसूक्ष्मेषु [illegible] देशतः [illegible] सन्निवेशानुभवाभाव-कृत्स्नेषु वा [illegible] स सवितर्का स्मृतिः । तत्राणो स्वरूपोल्लेखेन [illegible] भूतसूक्ष्मावस्थादिरूपानुपातिषु । (Vyasa Bhashya, Sutra 44 Pada I)

Unlike the natural philosophies of ancient Greece h believed in the uncuttability or indivisibility of s, a view which survived till about 50 years ago, *Sāmkhya Patanjala* system held that *even an has constituent parts i.e., it is constituted by nātras.*

Following on this concept, it has been stated that om takes more than one '*Kshana*' to change its ion in Space.

The definition of a '*Kshana*' or moment, there- reduces itself to *a motion of that which is abso- y simple and without parts, from one point in Space to next which cannot but be instantaneous.* This instan- ous transit is conceived as an absolute unit of change therefore, the unit of time i.e. *Kshana.*

If a *Kshana* as described above is treated as an ducible and absolute unit of Time, then, the Time tinuum cannot but be discrete. *Kāla* is of one ension. Two or more *Kshanās* cannot and do not t at the same time. For that matter, any series of anās or moments do not exist. Hence order in Time, *Kāla* is nothing but the relation of *Bhūta* to *tamāna* i.e., the *Kshana* or moment that is and the ment that went before.

It will be seen from the above, that only one *ana* or moment actually exists i.e., the *Kshana* oment known as the present or *Vartamāna.* Hence, *rishyat* or the future to come and *Bhūta* or past s significance, except for indicating the potentiality sublatency of any phenomenon.

The transformation to which things in nat
subjected to, is their change from the potential
actual, and from the actual to the sublatent. T
known as *Lakshana Parinama* or the change of
which is the opposite of the change of quality
Dharma Parinama and change due to duration
lapse of time (interval of time) viz., *Avastha Parin*

The *Vartamana* or the present is, therefo
mark of actuality; the future, the mark of poten
and the past, sublatency in a phenomenon. Onl
single *Kshana* or moment is actual and the
Universe evolves in that single instant. The rem
is but potential or sublatent.[2]

Clarifying the conception of *Kala* referred to
Vijnana Bhikshu points out that what has been
in this regard does not amount to a denial of Tim
observes that Time has no real or objective ex
apart from the 'moment' or *Kshana*; and it is re
identical with the unit of change in the phenomer

---

1. क्षणान् क्रमोः [illegible] क्षणान्। [Yoga Sutra Vibhu
Sutra 52.] [illegible] इति सुविस्तरः [illegible]
स खल्वयं कालः वस्तुशून्यो बुद्धि [illegible]
वस्तुसत्कः इव अवभासते। क्षणस्तु वस्तुतोऽस्त्यवस्तुकश्च। [illegible]
विद्यः कालः इति व्यवहारो दीपितः। न च द्वौ क्षणौ सह भवतः, क्रमश्च न क्षणयोः सह
वस्तुत्वमवस्तुत्वमादिनो वास्तवस्य क्षणस्य न कालः। तस्मात् दर्शनेन एकैकः क्षणः
क्षणः वास्तविकः वस्तुसत्कोऽपि वस्तुशून्यः ये तु भूतभविष्यन्तः क्षणाः ये वर्तमानविनाशिनः न
तैरेतेन क्षणेन क्षणस्य सह [illegible] वस्तुशून्यरूपः खल्वयं धर्मी। [illegible]
वर्तमानेन इत्थं व्यवहारः [illegible] क्षणः क्षणः। वर्तमानो यः स्वतन्त्रेण चलितः
पूर्वापरौ व्यवहारान् व्यवस्थापयेत् न कालः क्षणः, न तु व्यवहारनिर्वाहस्तु कालः।
Bhashya, Sutra 52, Pada III]

2. [illegible] क्षणवचनात्। [Vijnana Bhikshu]

is significant to note in this context that trends in respect of the concept of Time bears a g resemblance in certain respects to the views of *mbhya Patanjala* system mentioned above. For ce, Adrian C. Moulyn, in his paper on 'Functions nt and Line in Time Measurement,' contributed to pril 1952 issue of the Journal of the Philosophy of ce' notes that the 'precious present' is the time is not only present but past and future as well. span of time is vaguely encompassed by a past which infiltrate the individual's past and his in two directions. The future fringe is a vague of transition between the here and now of the nt and the immediately adjacent future, and tary movements are always projected into the own future which lies to grasphold. Thus volun- movements integrate our past with our future in precious present'. This synthesis is an indivisible oral whole, bound together by the purpose of which is striving, projected into the future fringe. ntary motility has a specific time structure, and the 'precious present' with its complex inter- tration of three aspects of time interpenetrating, be the appropriate medium for the type of ement".[1]

n an earlier paper entitled "Time in relation to ophysiology and Psychology" contributed to the journal (January 1952), Moulyn says: Psychological has three aspects. It takes up a stretch of

[1] Adrian C. Moulyn, "Functions of Point and Line in Time ement," Philosophy of Science, published by the Williams and Wilkins any, Baltimore, April 1952 issue.

duration in the present and infiltrates on
into the past and future. Clay has suggested
'specious time' for a time which is delusively
'present' inferring that a present instant
duration is an illusion. The specious present,
does not differ from the 'punctiform
physical time, and is inadequate as a psychol
form. William James describes the 'specio
as no knife edge, but a saddle back with
breadth of its own on which we sit perched,
which we look into two directions of time. He
forward and backward looking ends– 'the fri
'specious present' which is a singularly a
designation for the vague connections be
present instant, past and future. In order to
all doubt whether the present instant of psy
time has duration, I suggest the term 'precio
The 'previous present' is a stretch of time
duration in the present and which has attributes
and futurity in its past and future fringes" (*ib*

A more striking view, nearly identical
the learned commentator of *Pātañjala Sūtra*
present *Kshana* is an absolute and irreducil
Time, was recently attributed to Albert
reported in the 'Indian Express' (Madras)
May 1952. Adverting to a controversy on the p
that "There is no present. Everything is
or in the future" which was referred to hi
Einstein is reported to have given the ruling
time you are talking about is time from psy
stand point. You are rightly of opinion
psychological present does not seem extended
However, from this, one cannot conclude

s not exist. From the psychological stand-
more correct to say, that the past and future
. What we call by these names are only
mories and present expectations. However,
xist an objective time, what is called 'Time'
Physical time knows only chronological order
but no present, no past and no future."

ews expressed by *Vachaspati* in his com-
n *Vyasa Bhashya of Patanjala Sutras*,
ynthesis of the two apparently conflicting
the present day on the physical and
al Time, and in this sense, it is a more
oncept as compared to its modern counter-

Space or Dik (Desa)

has been distinguished as *Desa* i.e., locus or
elative Space) and extension, and *Dik* as
ace. The latter is the totality of position
r of co-existent points. It is wholly relative
erstanding as in the case of order in Time
rued on the basis of relations of positions
our (experiencing) consciousness. It has
that there is a difference between Space
orders i.e., there is no unit of Space as
Dik, though we may conceive a unit of
a.[1] Position in Space (*Dik*) results only
ferent relations in which the all-pervasive—
s to various finite or bounded objects. On
nd, Space is an extension (*Parimana*) or
finite body. *Desa* (स्थान-सम्बन्ध)

[1] देश—सर्वसंबन्धि क्षणसंबन्धि। (Yoga Vartika - Sutra III.

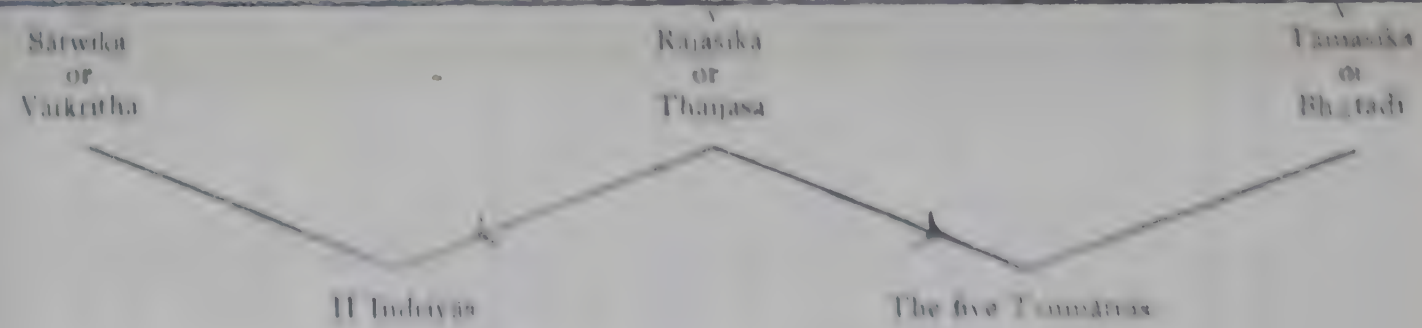
ultimate unit, being analysable into the extensive quantity or inherent in the patte of *Prakṛti*.[1]

Tanmātra Sṛishṭi

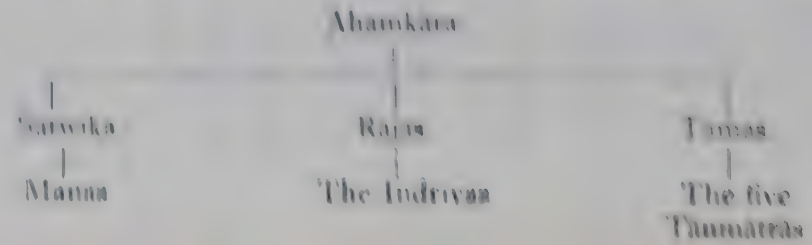
The term *Tanmātra Sṛishṭi* refers to and evolution of *Tanmātrās* i.e., infinitesi carrying definite quantities or charges of noted earlier that *Ahaṁkāra* bifurcates int and object series during the course *Tanmātrās* arise in the course of the *Pa* object series. Both *Vāchaspati Miśra* Bhikṣhu have furnished a schema each to stages of evolution beyond *Ahaṁkāra*. The are nearly identical except in respect of a d the evolution of *Manas* and the *Indriya* to the former, *Manas* and the ten *In* evolutes of *Sāttvika Ahaṁkāra*, whereas the latter, *Manas* is an evolute of *Ahaṁkāra* and the ten *Indriyas* are t *Thaijasika Ahaṁkāra*.

There are three stages in the evo *Tanmātrās*, as can be seen from the two sch in the next page.

The first stage: In this stage the of *Ahaṁkāra* is brought to an end, and itself into three kinds of *Ahaṁkāras* vi



THE SCHEMA FURNISHED BY VIGNANA BHIKSHU



Vaikarika, *Rājasika* and *Tāmasika* A
object series evolves from the *Tāma*
which is also known as *Bhūtādi*. The
state i.e., *Bhūtādi*, represents an absolute
ubiquitous and infinitesimal units of ma

The second stage: In this stage *R*
or energy, charges the *Tamas*, whi
original units of mass i.e., the infinite
carrying different units or quanta of en
here the infra-atomic unit potentials
different kinds of energies, viz., *Tanmā*

The third stage: The *Tanmātrās* con
produce the five kinds of *Paramānus* w
forms of matter are composed. In fact,
Paramānus correspond to the 92 modern
and they represent complex *Tanmātrās*

In the first of the three stages m
Bhūtādi is absolutely homogeneous, inc
all physical and chemical characteristics[1]
or mass.[2]

This i.e., *Bhūtādi* does not admit o
or subtraction, neither can it be created

The second stage represents the c
extremely subtle but charged matter
impinges, radiates, etc. These character
nal to the related particles and
account of an unequal aggregation of th
units in different proportions and collo

1. [illegible] (Dravya Vaiśeṣika)
2. [illegible] (Jaina)

ution of *Rajas* or original energy in

ūrās are not abstract concepts conveying
and energy. They have been posited
tances possessing physical characteris-
hem possess the property of penetet-
isadāna. Of the others, some exhibit
light and heat; some impact or pressure;
and yet others cohesive attraction etc.
nately with the physical characteristics
ve, they also possess energies charac-
d, touch, colour, taste and smell, but
subtle (*Sūkshma*) they do not express
pecific forms i.e., *Visesha*, which they
cles of gross matter, like the *Anūs* or
aggregates of atoms. In other words,
ntials held in or carried by subtle parti-
matter undergo transformations by new
locations to be classed among sensory
in the minutest particles thereof, the
are below the threshold level of sensi-
riya but not *Anudbhūta*.[1]

trās can, therefore, be stated to be infra-
charged with potential energies as
ow :

otentials of *Sabda* (sound) are held in
ticles. These are *Tanmātrās* charged
of vibration or *Paripanda*. They serve

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[1] कणास्तु ते तेषु सक्ष्मत्वेनाप्रत्यक्षत्वात् न्यूनाधिकत्वेन परस्परं
योगेऽप्यनारब्धत्वात् ते भूतम्

न्यत्वात् ते न तेषां ते न तत्र तत्र तत्तत्वानुपपत्तेः
न्यत्वात्, तत्र तत्तद्विशेषानुपपत्तेरनारब्धत्वात् भूतानां

[1] Quoted by B. N. Seal in his "Positive Sciences of Ancient

as the radicle for the formation subsequently *Paramāṇu*.

II. The potential of *Sparsa* is lodged class of *Tanmātrās*. These are particles wh the physical energy of impact (impingement capable of exerting mechanical pressure. Th *Tanmātrās* holds, in addition, the potentials of The *Akāśa Tanmātra* as it is called, serves as t for the formation of the *Paramāṇu* of *Vāyu*.

III. The potential of *Rūpa* (colour held in a third class of *Tanmātrās*. These are charged with radiant energy and light. This in addition to those of *Śabda* and *Sparsa*. particle thus charged is known as the *Tejas* *Tanmātrās* belonging to this class form the r the formation of the *Tejas Paramāṇu*.

IV. The potentials of *Rasa* (viscous are held in yet another class of *Tanmātr* already carry the potentials of *Śabda*, *Sparsa* These serve as radicles for the formation *Ap Paramāṇu*.

V. The potential of *Gandha* or (smel is held in another class of *Tanmātrās* wh *Śabda*, *Sparsa*, *Rūpa* and *Rasa* energies constitute the nucleus for the formation *Paramāṇu*.[1]

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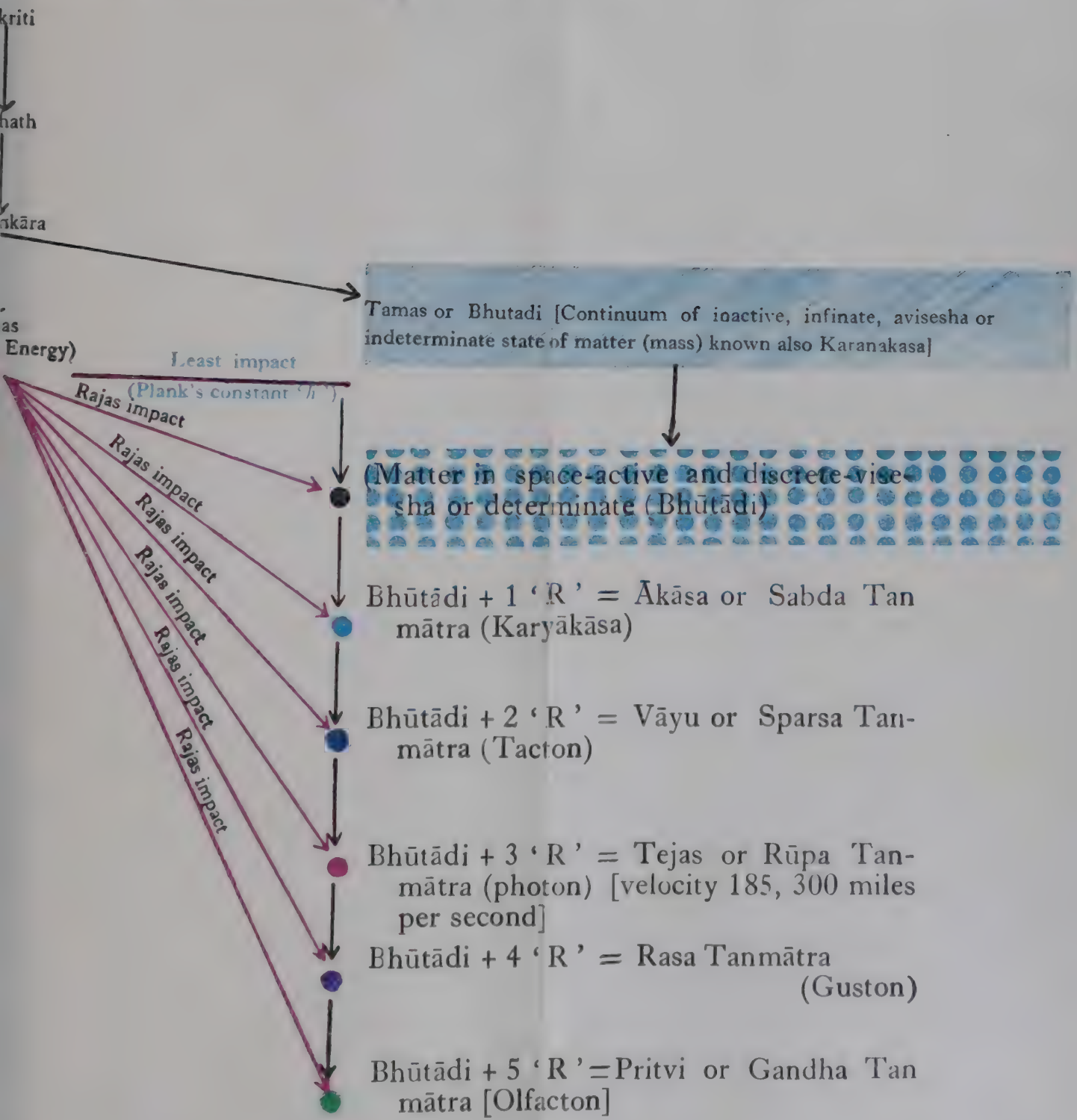
1 [illegible] (Vaiśe Bhāṣ

(Contd. on next page)

ON OF THE PARINĀMA OR EVOLUTION OF TANMĀTRĀS
Bhāshya, Pravachana Bhāshyas & Yoga Vārtika)


kriti
hath
nkāra
as
Energy)
Least impact
(Plank's constant 'h')
Rajas impact
Rajas impact
Rajas impact
Rajas impact
Rajas impact
Rajas impact
Rajas impact
Tamas or Bhutadi [Continuum of inactive, infinate, avisesha or indeterminate state of matter (mass) known also Karanakasa]
(Matter in space-active and discrete-visesha or determinate (Bhūtādi)
Bhūtādi + 1 'R' = Ākāsa or Sabda Tan mātra (Karyākāsa)
Bhūtādi + 2 'R' = Vāyu or Sparsa Tan-mātra (Tacton)
Bhūtādi + 3 'R' = Tejas or Rūpa Tan-mātra (photon) [velocity 185, 300 miles per second]
Bhūtādi + 4 'R' = Rasa Tanmātra (Guston)
Bhūtādi + 5 'R' = Pritvi or Gandha Tan mātra [Olfacton]

The two avasthas or aspects of Ākāsa

It is necessary at this point to have a clear idea
kāsa. It is stated to be the link between the
nātrās and the *Paramānus*. In some respects it
nbles the description of the undulatory ether, and
hers the protyle. It is stated to be all-pervasive in
rmer aspect, i.e., *Vibhu* or continuum and possesses
roperty of peneterability. This property of *Akāsa*
characterises the *Akasa Tanmātra*. In its latter
ct, *Akāsa* is stated to have originated from the mass
hertia i.e., *Bhūtādi* due to the charge on it by
nika or *Thaijasika Ahamkāra*, yielding *Akāsa*
mātra.

The concept of the two different aspects of the
a, apparently of the opposite types, have been
nciled by *Vignana Bhikshu*. According to him, *Akāsa*
ated to have two aspects viz., (i) the original, and
the derivative. The former is a continuum and
-atomic and the latter atomic. The original *Akāsa*
e undifferentiated and formless *Tamas* (the mass in
kriti—the rudiment of matter i.e., *Bhūtādi*) which is

II). शब्दगुण एवान्यत्र तन्मात्रशब्दगुणत्वेन एवान्यत्र एवमन्यासु तन्मात्रासु
एवं क्रमेण एकैक गुणवृद्धा तन्मात्राणि उत्पद्यन्ते । (Pravachana Bhashya Sutra 62
I). इत्यादीनां सूक्ष्मभूतशब्दार्थानां एक: परिणाम: सूक्ष्मेषूपलभ्यमानु तन्मात्रवयव:
तेषु अपि भेदेषूपलभ्यमानत्वात्तद्भूतादीनि उपादाय तत्तत् एकविकारत्वम् तत्तत्
e Bhashya Sutra I-Pada IV). तथा—तन्मात्रत्व शब्दस्य चतुरन्तत्वात्
देशेन एक: परिणाम: प्रत्यक्षेषु देश च महत्त्वादि । एव तन्मात्रे शब्दस्य
तत्रैव ना चित्तत्वात् देशे अणु देश्य महत्त्वादि: । एवमन्यत्रापि शब्दस्य तन्मात्र
वाच्यु देश्य: महत्त्वाच्यादि । एव शब्दतन्मात्रादहङ्कार: शब्दगुणत्व आकाशाणु
महत्त्वादि: । Says Vignana Bhikshu: अवतारे अयं सिद्धान्त: उत्पत्ति
त्वाद्वे कारिण्यनेदादिभ्यश्च: सूक्ष्मभूतेभ्य: सन्त । (Yoga Vartika Sutra 14

IV]

2. The *Sabda Tanmâtra* forming the
with the addition of *Bhûtâdi* charged wit
gives rise to the next evolute i.e., the *Spar*
or touch-potential. This *Tanmâtra* is both v
impingent.

3. The *Sparsa Tanmâtra* forming the
with the addition of *Bhûtâdi* charged wit
next evolute *Rûpa Tanmâtra* which radi
heat is stated to arise. This *Tanmâtra* has
to the main characteristics noted above, th
vibration i.e., sound (*Sabda*) and impingenc

4. With *Rûpa Tanmâtra* forming the
the addition of *Bhûtâdi* charged with *R*
evolute, the *Rasa Tanmatra* or the potent
stated to be formed. In addition to being
the energy of taste, the *Rasa Tanmâtra* has
of viscous attraction, and it combines in it
Sabda, *Sparsa* and *Rûpa*.

5. The *Rasa Tanmâtra* forming th
with the addition of *Bhûtâdi* charged wi
Gandha Tanmâtra is stated to be formed
last evolute in the series. This particle
charged with the smell potential and pos
tion, the potentials of *Sabda*, *Sparsa*, *Rû*
also.[1]

The Tanmatras and Quantum The

According to the late Prof. Yadhuna
M. A. (Cantab), B. S. U. (Lond.), the

1. After Patanjali.

resemblance between the ancient Hindu and the modern Western concepts of the structure of the atom. In his opinion, " The *Tanmātric* energy corresponds in all probability to the energy locked up in the proton-electron nucleus of the atom. While the five types of *Tanmātrās* of *Panchūbhūtās* that the Hindus speak of has no definite counterpart in modern physics, the explanation for the distinction may perhaps be found in the quantum theory of modern physics, for, the very word *Tanmātra* contains a definite suggestion of "Quantum" or 'measure' (*Mātra*)"[1]

The Quantum theory of modern physics deals with only one kind of quantum viz., the quantum of photon or the bundle of radiant energy which stimulates the retina of our eyes and enables us to see or become conscious of the sensation of vision. But as observed by Vaidyaratna Capt. G. Srinivasa Murti,[2] "We need four more or five quanta in all, to enable us to become aware of the intimations of all the five senses, namely, senses of hearing, touching, seeing, tasting and smelling; for, the Ayurvedists hold that the type of *Panchabhautic* matter of each of our sensory organs determines the kind of sensation we become aware of when the mind attends to the report of the particular sense organ concerned. We 'see' an object by means of our eyes because of the presence therein of *Panchabhautic* matter of the type of *Tejas* (luminant or radiant matter?) from which its predominant *Tanmātra* viz., *Rūpa Tanmātra* (bundle of photons constituting light?) move to enter our eyes and contact our retinas which report to our minds the

1. 'Memorandum on the "Science and Art of Indian Medicine" by Vaidyaratna Capt. G. Srinivasa Murti B. A. B. L. & M. B. & C. M., contributed to the Report of the Chopra Committee; Vol; II, p. 334.

2. Ibid pp. 334–335.

presence of light from objects seen, and we, [illegible] jects, become aware of the objects seen." [illegible] James Jeans who says, "In general, we may say [illegible] experience the outer world through small [illegible] coming into contact with our sense organs. [illegible] world consists of matter and energy. Simple [illegible] outer world consists of molecules and photons. [illegible] Srivatsa Murti observes that "it is not [illegible] Ayurvedics to speak of only one kind of [illegible] namely Pitta, we need to admit, Pitta [illegible] tva, Pittatva and Pittatvam" corresponding to [illegible] Tamasika, Sparsa Tamasika, Rasa Tamasika [illegible] Tamasika respectively. In other words the [illegible] vaibhava of the Siddhanta may represent the [illegible] qualities of specific modes of energy.[2]

Siddha Paramanus

These premises: The five kinds of Siddha [illegible] arise out of the combinations of the five Tamasika [illegible] ses namely and persons. The Siddhanta considers [illegible] Tamasikas, but the number of the kinds and [illegible] of the atoms in each group differ.

1. The Siddha Paramanu is formed with [illegible] Tamasikas as nucleus and four uncharged [illegible] Siddhas in the periphery.

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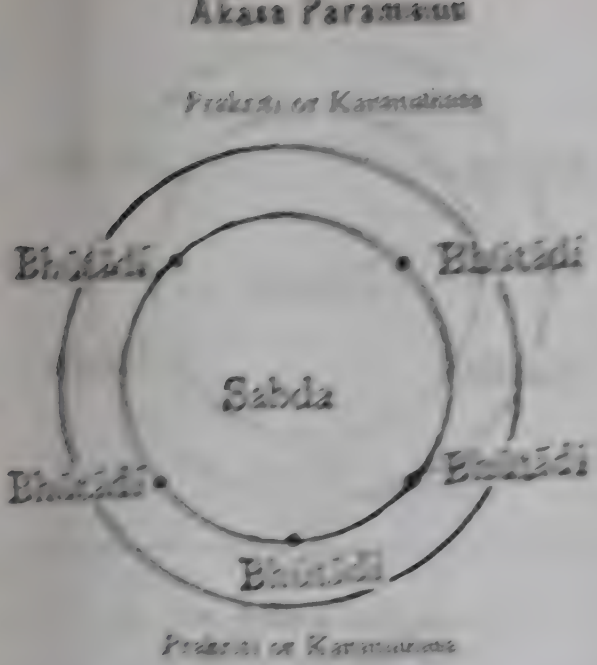
1. Sir James Jeans. "The New Background of Science" [illegible] p. 64.

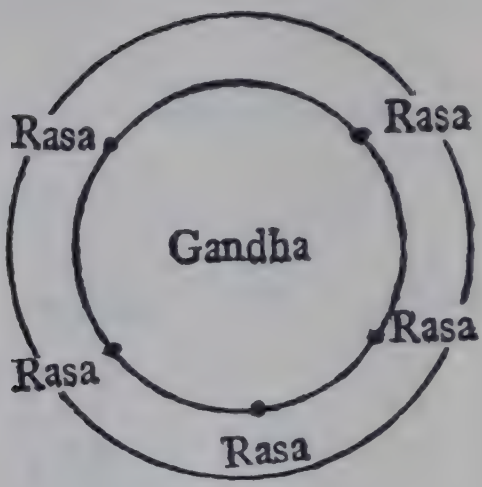
2. Dr. Srivatsa Murti. "The Key Concepts of Ayurveda" [illegible] Central Council for Research in Ayurveda and Siddha, [illegible] Chapter-Concepts of Ayurveda, Page 4, New Delhi.



...pe of ...māṇu	Tanmātrā which acts as the centre radicle	Tanmātrās which act as peripheral unit:
...a Para- (Mono- ...māric)	Śabda Tanmātra i.e., Bhūtādi charged potentially with the energy of sound impacts; possesses potentially Paru-panda or vibration energy	Bhūtādi core of all proto-matters but it is not in itself the Tanmātra

II. The *Vāyu Paramāṇu* is constituted with *Śabda* ...mātras and *Sparśa Tanmātra*. Its property is ...gence and general sensibility i.e., capable of effect- ...tactile sensations. It serves as the medium for ... or *Śabdaguṇa*. It also vibrates.

Prithvi Paramānu



Type of Paramānu	*Tanmātrās which act as the central radicle*	*Tanmātrās which act as perepheral units*
Prithvi paramānu Pentā Tanmātric	*Gandha Tanmātra Bhutādi* charged potentially with the energy of smell impacts; possesses potentially vibration energy plus light energy plus tactile energy plus taste energy	*Rasa Tanmātra*

Krishnapāda in his *Tatvatraya Vivarana* presents an interesting picture of the genesis and structure of the *Tanmatras* and the *Bhūta Paramānūs*. According to him the *Tanmātrās* evolve from one another in a linear series, and each *Bhūta* arises as an evolute from its own *Tanmātra*.[1]

1. B. N. Seal : "The Positive Sciences of the Ancient Hindus" pp. 33-34

A DIAGRAMATIC REPRESENTATION OF THE CONSTITUTION OF THE BHŪTA PARAMĀNŪS

(Illustrated with the example of a Prithvi Paramānu)

LEGEND

■ Gandha Tanmātra–(Bhūtādi + 5 'R')

◡ Rasa Tanmātra–(Bhūtādi + 4 'R')

▲ Rūpa Tanmātra–(Bhūtādi + 3 'R')

★ Sparsa Tanmātra–(Bhūtādi + 2 'R')

● Sabda Tanmātra–(Bhūtādi + 1 'R')

○ Bhūtādi (Karyākāsa-Uncharged protyle)

R = Rajas

[Note :— The symbols employed in this diagram to represent the five different Tanmatras were furnished by Dr. L. Sibaiya D. Sc., F. A. S., Professor of Physics, Mysore University, from the Kannada manuscript of Panchikarani Vyakyhana by Yati Vadiraja.]

The schema of the evolution of Tanmātrās in a linear series and from them the corresponding Bhūtānus.

Bhūtādi

Sabda (or Sound) *Tanmātra*—as a radical or centre surrounded or encircled by *Bhūtādi* generates *Ākāsa.*

Sparsa (or Touch) *Tanmātra*—as a radicle or centre encircled by *Sabda Tanmātra* with *Ākāsa* atom as a help, generates *Vāyu.*

Rūpa (or Colour) *Tanmātra*—as a radicle or centre encircled by *Sparsa Tanmātrās* with *Vāyū* atom as a help, generates *Tejas.*

Rasa (or Taste) *Tanmātra*—as a radicle or centre encircled by *Rūpa Tanmātrās* with *Tejas*-atom as a help, generates *Ap.*

Gandha (or Smell) *Tanmātra*—as a radicle or centre encircled by *Rūpa Tanmātra* with *Ap*-atom as a help, generates *Prithvi.*

The Panchabhūta Theory

It will be seen from the foregoing account that it is wrong and misleading to equate, as has been often done, the term *Panchabhūta* comprising of the concepts of *Prithvi*, *Ap*, *Tejas*, *Vāyu* and *Ākāsa* to Earth, Water, Fire, Air and Sky—an old and erroneous concept of the ancient Greeks since disproved by the rapid developments which have taken place in Physics during the last two hundred years. It will, on the other hand be seen, that the *Panchabhūta* doctrine of Matter represents a

generalisation that comprehends a large number of funda mental scientific concepts and principles, such as th theory of *the Evolution of Matter*; *the Conservation an Dissipation of Energy*; *Causality*, *Quantum theory* and s forth. In this sense, *the more recent developments i Physics that goes by the name 'New Physics' whi is based on the concepts of 'Time'; the principle o 'Causality' and 'Determinism', resemble the gener out-look of the Panchabhūta theory*. In th light of experience, the *New Physicists* have bee compelled to recognise an entirely new complexity the principle of '*Causality*', though its essence h been unaffected. There is always a cause for eve effect and the elimination of the cause always enta the dissappearance of the effect. The '*Deterministi* trend in the '*New Physics*' considers the phenomen by which the mind believes in the possibility of a theor tical construction in which, the initial state of a syste wholly determines its subsequent states. Modern scien is continually amplifying the concept of cause; it does n destroy it. According to the trends refered to abo the *New Physics* introduces a new descrimination in t application of those principles but preserves the essentially in facts.

In the words of Sir B. N. Seal,[1] "The five *Bhū* stand for a classification of substances on the basis their generic properties, resulting as the *Sāmkhyās* ho from the structural types of their constituent atoms

1. B. N. Seal: "Positive Sciences of the Hindus (1915 Edn.) Page

lassification more physical than chemical, or properly aking physico-chemical, unlike the purely chemical ssification of the so-called elements of modern che- stry. *Paramānus* are types of atoms, corresponding each *Bhuta* class, and indeed one and the same kind *Paramānu* may comprehend atoms of different masses only they agree in their structural type."

The *Panchabhutās* correspond to the five senses, ., the senses of smell, taste, vision, touch and sound spectively. The external world-the environment of man- apprehended subjectively by means of his five senses hich have so far been developed in man at the present age of his evolution. The object series of five kinds Matter and the subject series of five kinds of senses be discussed shortly), are both the outcome of an olution which arise in a parallel series having their mmon origin in *Prakriti* at the level of *Aahmkāra*. il Matter in the phenomenal Universe can be classified no more or no less than five kinds, because ere are at present only five senses developed with hich the external world—man's environment—can be ntacted and through which it is reported to the mind. will follow from this that if and when a sixth sense developed in the future, it would then become neces- ry to reclassify the matter of our environment into x classes.[1]

The correlation of the senses with the matter of e environment is assuming importance in modern ientific thought. That such a correlation is already ing shape can be seen from the attempts of Sir

1. This view is that of Vaidyaratna Capt. G. Srinivasa Murti with which the author is in full agreement.

James Jeans to define Matter as "*that which is capable of originating objective sensations—sensations which can be perceived by any one who is suitably conditioned to receive them—as for instance, by sending rays of light into the eyes (italics mine).*"[1] He also notes: "*We have most certain knowledge of ourselves and our sensations. These sensations reach us through our senses. Of these, the sense of seeing is most important. Visual perception is due to the impact of radiation on our retina, which arrives in the form of the individual units of radiations known as 'photons.' The other sense organs also act in the same manner, the smallest unit of sensation being produced by the arrival of single qnantam of energy from the external word.*" *(italics mine)*[2]

The correlation of Matter, Senses and the Mind has, however, not yet been developed in modern science to the extent and in the manner as developed in ancient India. In the case of the latter, it serves to synthesise the knowledge of the physical, biological (physiological) and psychological sciences into one body of knowledge and as parts of an integrated whole.[3]

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1. Sir James Jeans: "New Background of Science," (1943 Edn.) P. 12.
2. Ibid.
3. Vaidyaratna Captain G. Srinivasa Murti has furnished an interesting orientation of Charaka's correlations and correspondences of Panchabhutas to the sense-organs, and the latter to their five objects, as hereunder:

1. Pancha Indriyas—the five special senses	Chakshus sense of Vision	Srotram sense of Audition	Ghranam sense of Smell	Rasanam sense of Taste	Sparsanam sense of Touch
2. Pancha Indriya Dravyas—the five matter types of Panchabhutas predominantly present	Tejas Radiant matter	Akasa Ethers	Prithvi Earths (solids)	Ap Waters (Liquids)	Vayu Airs (gaseous) matter

[Continued in the next page]

In the *Panchabhuta* doctrine of Matter, we have a complete theory. By the application of this theory, we may classify and describe not only the 92 chemical atoms so far known, but also the many more as may be discovered in the future. By the same token, the constituents of atoms i.e., the so-called elementary particles can also be classified and described.

Rounding up this discussion, we may describe the concept of the five *Bhūtās* in the following manner:

1. *Ākāsa* as the space (the field) of primal matter where any thing can shine or become manifest and vibrate, and in which not only the quiescent but also the active and energised matter can exist;
2. *Vāyu* as motion of all kinds;
3. *Tejas* as radiation and heat;
4. *Ap* as the factor necessary for keeping the 'thing' in motion and maintaining it in its path or orbit and also for maintaining its characteristic individuality—in other words, the principle (or energy) that determines viscosity and cohesion; and,
5. *Prithvi* as mass with potential energy of various kinds locked up in it.

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3. Pancha Indriya Adhishtanas-Five locations of the five special senses	Akshi Eye	Karna Ear	Nasika Nose	Jihwa Tongue	Twak Skin
4. Pancha Indriya Vishayas-The five Tanmatras-objects [Quanta] apprehended by the five senses	Rupa ‡ *Photon*	Sabda ‡ *Audition* or *Akoustikon*	Gandha ‡ *Olfacton*	Rasa ‡ *Guston*	Sparsa ‡ *Tacton*
5. Pancha Indriya Buddhis—The five perceptions	Chakshur Buddhi (perception of vision) and other Buddhis (like Srotra Buddhi or the perception of Audition etc). These are transformations of the five sensations into the five corresponding perceptions when Sense objects, Senses, Mind and Atman are in tune.'				

‡Capt. Murti notes "If the above neologisms are ungramatical or uncouth, I beg to be excused. For, I know no Latin or Greeks If and when the need arises, the incorrect or uncouth terms will undoubtedly be replaced by correct and suitable substitutes".

Parimāna

Parimāna is demension i.e., size and extensi
The *Sāmkhya* recognises two kinds of *Parimāna* viz.
infinitesimal (continuum) and the non-infinitesimal
crete). The former is without parts or *Niravayava*
Paramahath and *Vibhu* (continuum), such as *Kā*
kāsa. The latter comprises of such discrete and
things as *Anus*, *Tanmātrās* and *Paramānās*.

Except the *Bhutādi* or *Tāmasika Ahamkāra*
Vaikārika Ahamkāra from which *Akāsa* and *M*
(*Antahkarana*) respectively evolve, all the other evo
whether *Sukshma* or *Stula*, are non-infinitesimal Onl
Gunās are infinitesimals. According to *Vignana Bh*
all the *Gunās* i.e., reals, are not to be treated as ubi
ous and only those *Gunās* from which *Akāsa* and *A*
karana arise, are ubiquitous [1]

Chemical analysis and synthesis

The question would now arise if the *Sāmkhya P*
jala system, after having made a careful physical an
and classification of things had considered the pro
of chemical analysis and synthesis. In passing, it w
interesting to take note of the view points of the an
Indian scientists in this regard.

According to the *Sāmkhya Patanjala* system *Sa*
or aggregates of substances--compounds--with
we come across, are classified into two groups viz.

i. Those whose parts are in intimate che
union and fusion and which are merged or lost i

1. [illegible] (Yogavartika: Sutra IV. Pada III)

This will amount to chemical union or *ayuta-ayava samuha*; and,

those that are mechanical aggregates or ...es of distinct and independent parts. This will ...t to mechanical mixtures or *yutasiddhavayava* ...a.

Ayutasiddhavayava samuha is classified under ...eadings viz., (a) the *Bhutas* and their varieties i.e., ...ic modifications —*Bhuta*, *Bhutabheda*, *Bhuta* ...; (b) Chemical compounds or *Milita dravya*.

...r B. N. Seal has used the term 'isomeric' to indicate Bhuta- ...nd Bhuta vikara. It means that things belonging to ayutasiddha ...amuha are made of the same elements in the same proportion and are ...ical. These substances are isomerides i.e., substances possessing ...l of chemical composition, yet having different properties. This may ...ained as follows:

Organic Compounds: Urea which is $CO\begin{matrix}NH_2\\NH_2\end{matrix}$ and ammonium ...which is NH_4CNO, have the same molecular formula, and yet, they ...ntirely different properties. In Ayurveda, this peculiarity is described ...dhava ... (Ash. Hr. I.X; 25)

Another example of this is Ethyl ether which is $(C_2H_5)_2O$ and Butyl ...which is C_4H_9OH.

Inorganic compounds: An example of chemical compounds with identical ...al properties, yet differing in physical properties and chemical compo- ...is lead chloride prepared from mineralic lead which has its origin in ...disintegration of uranium minerals. It differs in composition from that ...ed from thorium minerals. It has identical properties but is of different ...mation. The reason for the difference lies in the fact that lead from the ...rces differs in atomic weights i.e., the atomic weight of ordinary lead is ...whereas, that of radio-active source is 206. It is clear that the lead ...s prepared from each one of these specimens will have different com- ...ns although no outward chemical differences can be discovered between ...

Actually almost every element is made up of a mixture of atoms of ...nt atomic weights. Although these atoms differ as regards weight, ...do not differ at all chemically, and so chemical tests fail to distinguish ...een them. Such atoms are known as the *Isotopes*.

The chemical compounds are again sub-divided into two kinds viz., (a) those composed of atoms or *anūs* of the same *Bhūta* class i.e., of different isomerics (*Bhūta*, *Bhūtabheda* and *Bhūtavikāra*) and different isomeric modifications of the same *Bhūta*, and (b) those composed of atoms or *anūs* of different *Bhūta* classes.

Two kinds of contacts: In the case of the first of the two groups referred to above, there is contact between isomeric atoms (*anūs*) i.e., *Sajātiya samyoga*.

Vijātiya samyoga: The first kind of contact or *Sajātiya samyoga* is stated to lead to intimate union.[1] It is held that the atoms or *anūs* belonging to the same group (isomeric) are attracted towards each other by a peculiar liberation of energy,[2] i.e., the attraction of similars by similars and they become linked firmly with one another by the material cause or *Upādāna Kārana* of the compound product.

The second kind of contact i.e., between the unlikes or heterogenous atoms takes place with the release of energy.[3] This breaks up each of the *Bhūtās* to re-form fresh combinations by making use of particles or atoms of one *Bhūta* as nuclei or radicle group, and particles of the rest round these radicles in a relatively free or unattached condition. In this instance, the *Bhūta* which serves to provide the radicle or nucleus, (not necessarily that which is numerically or quantita-

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1. सङ्गः,– सङ्गाख्यः यः संयोगविशेषः तेनैवद्रव्याणाम् विकारोभवति । (Vignana Bhiksu ; Pravachana Bhashya)
2. सजातीयोपष्टम्भ
3. उपष्टम्भ

tively predominant) gets the name of the *Upādāna Kārna*. The others, which by their collocation make for the release of energy—*Upashtambha, Avashtambha* or *Vishtāmbha*—are known as *Nimitta Kāranās*.[1]

Aniruddha, another commentator proceeds a step further in treating both *Sajātiya* (isomeric) and *Vijātiya* (polymeric)[2] or heterogenic combinations as real instances of constitutive contacts.[3]

In addition to the transformation of substances by *Sajātiya* and *Vijātiya* types of contacts and processes involved in them, ceaseless changes are stated to be going on all the time in the characters, modality and states of substances. These changes are said to be due to the unequal distribution of force among the *Gunās*, which in themselves are constant.

Molecules and complexes of molecules: The *Paramānu* has been defined as the smallest portion of any substance which exhibits the characteristic qualities of that substance. This description relates to the smallest homogeneous portion of any substance. In addition, it is stated to be made up of parts, and therefore, divisible and subject to disintegration.

In the case of *Bhūta* or its modification due to *Sajātiya samyoga* (isomeric), the *Paramānu* i.e., the smallest homogenous particle is unmixed with any other substance. It is in this respect that the *Paramānu*

1. एवमेकैकगुणसम्भवात् प्रधानगुणं आश्रित्य अप्रधानगुणाः परिणामभेदान् प्रवर्तयन्ति । (Vachaspati: Koumadi on Karika 16).

2. B. N. Seal uses the term 'polymeric' to mean Vijathiya Samyoga.

3. आरम्भकसंयोग e g.. भौतिकत्वायोर्देहारम्भकत्वम् । (Aniruddha on Sutra 113, Chapter V)

resembles the description of the modern chemical element.[1]

In a mixed substance i.e., *Militadravya samhata bhūtārta*, whether it is *Sajātiya* (isomeric) or *Vijātiya* (polymeric) compound, the qualities exhibited are stated to arise due to the mixture. Therefore, its *Paramānu* i.e., the smallest homogeneous particle which possesses its characteristic qualities, result from the mixture of the *Paramānūs* in smaller or larger number, as the case may be, of the component substances. The *Paramānu* of a mixed substance, therefore, corresponds to what is known to-day as the molecule.[2]

The *Samkhyās* recognize the formation of molecules-*Dwayānukādi*—in the formation of substances.[3]

The Jaina contribution.

It is necessary in this connection to take note of some of the important contributions made by the *Jaina*

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1. The modern description of an element is that it is a distinct piece of matter which has not yet been shown to be composed of two or more different kinds of matter. "A chemical element is a distinct species of matter which cannot be converted by the action of heat, chemical reaction with other substances, or small electrical potentials into two or more electrically neutral different kinds of matter." (Sherwood Taylor: Inorganic Chemistry; P. 20.)

2. अपकर्षपर्यन्तं द्रव्यं परमाणुरिति । (Vyasa Bhashya)
लोष्टस्य हि प्रविभज्यमानस्य यस्मिन्नवयवे अल्पत्व-
तारतम्यं व्यवतिष्टते सः अपकर्षपर्य्यन्तपरमाणुः ।

(Vachaspti: Tatva Vaisaradi: Sutra 52; Pada III)

नाणुनित्यता न निर्भागत्वम् । पृथिवीपरमाणुः
जलपरमाणुरित्यादिव्यवहारस्तु पृतिव्यादीनां अपकर्षकाष्टाभिप्रयेणैव ।

(Vignana Bhikshu: Pravachana Bhashya; Sutra 88; Chapter V)

3. तथा अन्योन्यश्रयाश्च द्वाणुकवत्गुणाः । (Goudapada: Karika, 12)

Darsana to the theory of Matter. The nine categories classified by them are as follows :

i. *Immaterial or Amūrtha* e.g., *Dharma*, *Adharma* *Dik* (Space) and *Kāla* (Time) :

ii. *Material or Mūrta* i.e., those that possess form e.g., *Pudgala* or Matter.

Jainās state that *Pudgala* or Matter alone is the vehicle of energy which is essentially kinetic i.e., in the nature of motion. All things in the Universe as are not the "Soul" are either 'Entities' i.e., *Dravya* or a change of state in an entity i.e., *Paryāya*

Pudgala or Matter and the changes or transformation which it undergoes, whether in the nature of subtle motion i.e., *Parispanda* and *Parināma* requires a physical basis. *Pudgala* or Matter exists in two forms viz., (*a*) *Anu* or atomic and (*b*) *Skandha* or aggregate.

This school of thought begins with an absolutely homogeneous mass of *Pudgala* which, by differentiation i.e., *Bheda*, breaks up into several kinds of *anūs* (atoms) which are qualitatively determined and by differentiation, integration and differentiation in the integrated [1] form *Skandha* or aggregate.

An *anu*, according to the *Jainās* is partless, without a beginning, middle or end. It is not only infinitesimal but also eternal and ultimate. A *Skandha* may vary from *Dāwnukās* to an infinitum—*Anantānuka*. The *Skandha* of *Dāwnuka* type is an aggregate of two atoms or *anūs* and so on. The ascending grades are :

i. those that can be numbered i.e., संख्येय

ii. indefinitely large i.e., असंख्येय

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1. संघातात्, भेदात्, संघातभेदात् ।

iii. infinity of the first order i.e., अनन्त
iv. infinity of the second order i.e., अनन्तानन्त
and so on.

Atomic linking and mutual attraction.

An important and noteworthy contribution of *Jainās* to the ancient Indian atomic theory relates to the atomic linking or the mutual attraction or repulsion, as the case may be of atoms, in the formation of molecules.

The question as to what constitutes atomic linking and whether it is only a contact or juxtaposition of atoms suficient to bring about their linking, has been put and sought to be answered by *Umāswāti* in the *Jainasūtrās* in 40 A. D. The first point stressed by him in this regard is that, no distinction can be made between forces that hold the atoms bound together as of the same *Bhūta* class and the chemical affinity of one *Bhūta* to another. He holds that the different classes of elementary substances—*Bhūtās*—are all evolved from the same primordial atoms. Mere contact or juxtaposition of atoms, in his opinion, is insufficient to constitute compounds. The linking of atoms or molecules, as the case may be, should first follow before a compound can be produced. The linking takes place under differen conditions. For this purpose, the combining particles of Matter or *Pudgala* must be of the opposite qualities.

He points out that no linking will take place in case where the qualities though of opposite kind are feeble and very defective—*Jaganyaguna*. In this view, two homogeneous particles or *Pudgalās*, even positive and negative do not unite. Another reason why, in some cases, linkage does not take place, is pointed out to be due to the

ual strength of the qualities of the two particles i.e., ual in the intensity concerned. If on the other hand strength and intensity of the one is twice as great as t of the other, even the smaller particles may be racted to one another. The change in state, in every e, is held to be due to the result of this linking. The ysical characteristics of the aggregate depend on the ture of this linking. When *Pudgalās* of equal inten- y—say negative and positive—modify each other, en there is stated to be a mutual attraction. In cases unequal intensity, the higher intensity is stated to uniform the lower, it being considered that an influ- ce passes from the higher to the lower. All changes the qualities of atoms are stated to depend on this nd of linking.[1]

Reverting to the *Sāmkhya Patanjala* system, *Vyāsa hāshya* makes a significant observation that inorganic atter, vegetable substances and animal substances are ot different from one another as their potential ergies and ultimate constituents are the same and ey are all essentially *Dwānukās* to begin with, and are eated as belonging to the same category i.e., *Sajāthiya* ompounds.

Utpala in his commentary on *Varāhamihirā's rihat Samhita* states clearly that "the *anūs* or atoms different *Bhūtās* may chemically combine to form olecules of compound substances, as much as atoms different modes of the same *Bhūta*."[2]

1. Umaswari, Tatwadhigama Sutras, Chapter 7, quoted by B. N. Seal in his "Positive Sciences of Ancient Hindus" pp. 93-94.

2. एव्यः पञ्चभ्यः (त्र्यणुकेभ्यः) पञ्चत्वहेतूनि त्र्यणूनि ।
केभ्यः इत्याह इतरेषाम् । यतः पञ्चत्वहेतूत्पत्तयः इतरेषाम् ।
(Utpala; Chapter 1, Sloka 7)

For the purpose of chemical analysis and synthe however, all substances in their chemical constitut have been classified under the one or the other of following classes :

(i) Eka Bhautic
(ii) Dwi Bhautic
(iii) Thri Bhautic
(vi) Chatur Bhautic
(v) Pancha Bhautic.

Compounds of different *Bhūtās* may again com to form more complex substances. These in their t combine to form still higher compounds and so on, i progressive series of transformations. This is spec so in respect of organic substances.

The primary physical characteristics of the ***Bhūtās*** are as follows :

Pārtiva : Heavy, rough, hard, inert, dense, s and opaque. It excites or stimulates sense of smell.[1]

Apya : Liquid, viscous, cold, soft, slippery fluid. It excites or stimulates sense of taste.[2]

Tejas : Hot, penetrating, subtle, light, dry, c trānsparent, rarefied and luminous. excites or stimulates the sense vision.[3]

---

1. गुरुकठिनस्थिरसान्द्रशीतमृदुश्लक्ष्णपार्थिवानि । [Charak
2. द्रव स्निग्धशीतमृदुपिच्छिलस्रावसंघातप्रसादनानि । [Ibid]
3. उष्णतीक्ष्णसूक्ष्मलघुशुष्कविशदखरप्रकाशकानि । [Ibid]

yavya: Light, dry, rarefied, clear or transparent and subtle. It excites the general tactile sensibility.[1]

kāśa: Imponderable, rarefied and elastic. It excites the sound sensibility.[2]

The Subject series.

ātrika Ahamkāra like *Śabdādi* is by itself inactive incapable of doing anything. It is compared in respect to a lame but an intelligent person. Like *di* it has also two *Avasthās* or states viz.,

i. A homogeneous *Vibhu* state (i.e., continuum) in its inactive or quiescent phase;

ii. An atomic state in which it differentiates itself into *anūs* when charged by *Rajas* i.e., *Thaijasika Ahamkāra*.

The *Manas* and the elements of the ten organative and conative—are stated to be potential in it.

Taking note of the latter fact, both the *Nyāya hikās* and *Charaka* have observed that "*Manas* is to have two properties, viz., atomic dimension ndivisible unity."[3]

In the *Sāmkhya Patanjala* system, however, *Manas* ne ten *Indriyās* are evolutes. According to one l, the first evolute of *Vaikrita Ahamkāra* is *Manās trahkarana*, which in its turn becomes an evolvent ten *Indriyās*. *Susruta* in particular, subscribes to iew.

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[1] चक्षुरिन्द्रियमात्रस्य दृक्शक्तेरुपबृंहणं वायवीयं । (Charaka)

[2] श्रोत्रस्योपबृंहणं शब्दाकाशात्मकं । (Ibid)

[3] आत्मेन्द्रियार्थबुद्धीनां हेतुत्वे सत्यकारणं । (Charaka Sarira 1. 21)

It follows from this that the *Manas* or the atoms of *Manās* are countless in number and it is known variously as *Satva*, *Antahkarana*, *Chitta* and *Buddhi*, and it is an evolute i.e., *Vikriti* in which the elements of the ten organs are stated to be in a potential state. The next stage of *Parināma* is more or less an actualisation of the elements of the five *Gnanendriyās* or the organs of sense-perception (receptors i.e., exteroceptors). The elemental sense units are :

i. The *Srotra* or the apparatus of sound perception ;

ii. The *Twak* or the apparatus of tactile perception ;

iii. The *Chakshus* or the apparatus of visual perception.

iv. The *Jihva* or the apparatus of taste perception ; and,

v. The *Nāsa* or the apparatus of smell perception.

According to the *Susruta* school, the elements of the five conative organs viz., organs of speech, hands, legs (i.e., organs of locomotion), the genetal and the anus are potential in the elements of the five cognative organs.

The relation between Manas and Indriyās.

Goudapāda in his commentary on *Sāmkhyakārika* has described the *Manas as Ubhayātmaka* i.e., it partakes the character of both the *Gnāna* (cognative) and *Karmendriyās* (conative), and its function is *Samkalpa* i.e., the property which determines the functioning of

the two sets of *Indriyās* with both of which it is connected.[1]

He states that the perception by the senses of the objects is vague and indeterminate: संकल्पंमनः प्रवृत्तिं कल्पयति ।

The environment which supplies the stimuli to the five senses are constituted by five distinct objects each of which possesses specific properties in that, they can only act as stimuli of the particular sense-organ concerned and not any other. It is in this respect that the Matter that constitutes the object series—the five *Tanmātrās* and *Bhūtās* and various things that arise in their infinite diversity on account of the combination and permutation of *Tanmātrās* and the *Bhūtās*—become the object or *Arthās* of the five senses. The same is also the case with the sense elements that constitute the subject series of the *Sāmkhya* schemata of cosmological evolution.

The important point to note here is the view, that the function of the sense-organs (exteroceptors) themselves is merely to pick up and transmit the impulses generated in them due to their impact with their

1. According to the modern or the latest ideas in Neuro-psychology, "The world which is external to the boundaries of the body is perceived by means of the exteroceptive sensory apparatus and through those proprioceptors by which we recognise the external parts and implements of our body and organs of communication. This is the original 'Non—I' world ... At the same time there is an internal world which is rooted originally in the dimmer, less sharply localised and less clearly descriminated subjective sensations from the body. This is the 'I' world of internal somatic sensations, mediated by enteroceptive and deeper proprioceptive experiences. It is not necessary here to trace the changing content of these two worlds or their areas of overlap; but it is possible to demonstrate that every conceptional unit is rooted in both the 'I' and 'Non—I' worlds." (Lawrance S. Kubie M. D.: 'The Central Representation of the Symbolic Process in Psychosomatic Disorders' Special article contributed to the Journal of the American Psychosomatic Medicine: Vol. XV. No. 1; Jan-Feb 1953. p. 5)

respective objects. The nature of the impulses, whatever their orign, are apparently the same as they travel through their respective (afferent or sensory) pathways to the *Manas*. It is perhaps for this reason that *Goudapāda* described the sense-perception as *Nirvikalpa Prathyaksha* i. e., simple or indeterminate perception. Mere simple or *Nirvikalpa Pratyaksha* of an object, in his view, is of no use and serves no purpose, as all such perceptions cognise their respective objects vaguely and the help of the *Manas* is sought to give definite and concrete orientation to the percept. He has characterised *Nirvikalpa Pratyaksha* as : नामजातीय योजनाहीनं आलोचनज्ञानम् ।

This fact is adequately borne out by Muller's doctrine which states that, " the character of a sensation is solely determined by the particular part of the cerebral cortex to which the sensory impulse is conducted. " According to this view, all impulses in the nerves of glands or skeletal muscles or on the sensory side of vision or hearing or touch or pain etc., are essentially alike as far as is known to-day. The effects of nerve stimulation—experimental or physiological—are dependent on the destination of the related nerve and the structure to which the impulses are carried, and not upon any functional peculiarity of the nerve fibers themselves or the specificity of nerve impulses. Yet, the fact remains that the sensations are highly specific. An introspection would show that the sense of touch is distinctly different from the sense of hearing. Each sensation has, what is known as its own modality. Dubois Reymond is quoted by Mitchel to have stated that, " if eye were connected to the auditory centres and the ear to the visual centres we should hear the lightning and see thunder."[1]

1. Mitchel : General Physiology; (1938 Edn) p. 137.

Lawrence S. Kubie M. D in a special article 'The Central Representation of the Symbolic Process Psychosomatic Disorders,' contributed to the nerican Journal of Psychosomatic Medicine,[1] refers a brain operation performed by Dr. Penfield of the ontreal Neurological Institute on an Iowa girl and in ner patients notes that, "In other stages of exploration, th of this patient and others, stimulation deep in the mporal lobe produced visual images of animal figures, usical sounds and body sounds, external end internal ells and gastro-intestinal sensation almost interangeably; in short, a broad array of extero and teroceptive data."[2]

This is a part of a larger truth; the specificity the effects of any nerve stimulation is determined by e place or mode of the ending of the nerve.

The *Manas* with which the senses are connected according to *Goudapada*, stated to give a definite and ncrete orientation to the percept or the thing perceid. This, he describes as *Savikalpa Pratyaksha* or determinate perception and characterises it as : सम्बन्धाधिगति शब्दस्य | The *Manas* perceives definite properties as belonging to the thing apprehended.

Goudadapāda proceeds to state that the *Indriyās* ossess threefold functions, viz.,

1. *Akarshana* or seizing,
2. *Dhārana* or retaining,
3. *Prakāsana* or manifesting.

1. "American Journal of Psychosomatic Medicine," Vol. XV No. 1, January-February 1953 issue.

2. Prof. R. V. Moncrieff observes in his work on "Chemical Senses" as "The uniformity of impulse suggests the possibility of crossing fibers surgical treatment, just as lines can be crossed, and unfortunately sometimes are in a telephone exchange, when the subject might hear an intrusive or even an enjoyable symphony concert," "Chemical Senses" by R. W. Moncrieff, p. 62.

Paramārta a commentator of *Sāmkhya* attribute *Akarshana* or seizing to *Antahkarana*; *Prakāsana* o manifestation to *Buddhindriyās*[1] and *Dhārana* or retentio to *Karmendriyās*.

The facts stated above represent a generalisation the relationship that exists between the mind on the or hand and the cognative and conative organs on th other, including the neural structures involved in th process viz., the afferent and efferent pathways and th concerned areas in the centres in the cerebral corte The term centres in the cerebral cortex is used he advisedly to represent *Antahkarana*, as for all intents a purposes, they are the locus of all mental activities. This justified by the fact that intellect is regarded by t *Sāmkhya system* as as a form of Matter. "If," as pointed Byliss and Winton, "such terms as the 'Mind' have a meaning apart from the behaviour of the whole organis they are clearly more closely connected with the cereb cortex than with any other part of the body. So it con about that physiologists and even philosophers have take the properties of brain into account when form lating their theories, and since these theories may be the utmost importance, as in the practice of educati and psychotherapy, it behoves us to examine the p perties with more than usually critical attention."[2] It true, at any rate, that the 'Mind' depends on the brain, a as stated by Margret Knight "This could be m accurately expressed as mental processes depend processes in the brain."[3] But the Mind is a conveni

1. Bhuddhindriyas are the five Gnanendriyas or exteroceptors.
2. "Human Physiology" by Byliss and Winton, 1948 Edn
3. Margret Knight : "Consciousness and the Brain;" Science N 25th issue, p. 97.

m provided it is understood that it belongs to the
ne logical category as 'memory' or 'intelligence'
l that, it does not refer to some non-material entity
tinct from and underlying our mental processes.
ne functions of the great bulk of the cerebral cortex
mprising of the motor, sensory and association
as—almost all the frontal and parietal lobes—
ich of the temporal and occipital lobes and in
e word, the central cerebral process, answer to the
scription of the *Ubhayātmaka* charecter of the Mind.

Adaptive Function of the Indriyas.

Another interesting view expressed by *Paramārtha*, nich is quite fresh and modern in its outlook, is that e *Indriyās* or the sensory and motor organs serve to dapt and adjust the organism (human in the present se) to the varying and often hostile vicissitudes of environment. He observes: "Among the organs, ere are those that apprehend objects close by, while hers perceive things afar. Their object is double viz.,

1. To avoid danger, and
2. To protect the body.

To avoid danger relates to eyes and ears which in eeing and hearing afar, avoid danger.

To protect the body (relates to the eight other rgans which perceive the eight species of objects from ch of the objects approaching the comprehending rgan, then permits us to regulate our body according o these objects."[1]

1. Notes on Sambhva Karika, Gaudapadi Bhashya by Dr. Hari Dutt harma, M. A., Ph. D. (1953 Edn.) p. 29.

Rounding up our studies so far, the process of evolution, i.e., *Parināma* proceeds on from Matter in its primordial *Avyakta* state by a series of successive gradations, until the phenomenal Universe inclusive of the stellar and the planettary systems ; the animate and the inanimate or the living and the non–living ; inorganic ; vegetable and animal, evolve by the process described as *Sāmsrishta Viveka* all through. In this, Man as far as is known, represents the highest known form of evolute.

Karma Purusha.

Our study so far was related to the evolution of the mind, senses and other materials which constitute the body or the vehicle. The thing that inhabits this vehicle and operates through it, the Soul or Spirit, as it is generally termed, remains yet to be considered.

It was noted earlier that the *tripod* that constitutes man is the sum total of *Satva* (Mind), *Atma* (Soul) and *Sārira* (Body).[1]

According to *Susruta*, the Spirit that inhabits the body and works through the mind and the ten *Indriyās*, is known as the *Karma Purusha* or *Kahetragna*. It is stated that the *Purusha* is the unit of self–consciousness. The self–conscious Selfs i.e., *Kshetragnās* are stated to be numerous. They are not *Vibhu* but are real and eternal. They are born in three different planes viz., Divine, Human and Animal—the particular plane of their occurance being determined by their acts of *Dharma* (righteousness) or *Adharma* (unrighteousness), as the case may be.

1. सत्त्वमात्मा शरीरं च त्रयमेतत् त्रिदण्डवत् ।
लोकस्तिष्ठति संयोगात्तत्र सत्त्वं प्रतिष्ठितम् ॥ (Charaka, Sutra 1: 46)

The existence, however, of *Karma Purusha* or the self-consious entity is ascertained and described by inference or *Anumāna*, as this entity is extremely subtle in nature. *Karma Purusha* which is possessed of infinite consciousness is real and eternally subject to the process of being evolved into a finite organic individual through the dynamics of the combined *Sukra* and *Artava*.

Purusha or the individual has further been described as nothing but a combination of a self-conscious 'Self' and the five kinds of matter i.e., *Panchabhūtās*, formed as an organic body. The *Karma Purusha* or the individual of action comes within the purview of the Science of Life or Ayurveda.[1]

Panchabhūtās and Tridoshās.

Tridoshās viz., *Vāyu*, *Pitta* and *Kapha* represent the threefold broad-based generalisation of the functions of the living body. They represent both energy and matter and their constitution, therefore, is *Panchabhutic*.[2] In their physiological state i.e., in a state of their normalcy which represents an unstable equilibrium of the three *doshās*, they are designated the *Tridhātūs*. They are also known as *Tridoshās* as their normal (but unstable) equilibrium is always susceptible to being disturbed.

A detailed treatment of these threefold functions will be taken up as a separate subject in the third volume of this series. We may here consider them in general, especially their relation to *Pancha Bhūtās*.

---

1. पञ्चमहाभूतशारीरिसमवायः पुरुषः इति ;
   स एव कर्मपुरुषश्चिकित्साधिकृतः । [Susruta: Sarira, 1 : 16]
2. कार्यकारणयोरभेदोपचारात् भूतशब्देन भौतिकमुच्यते द्रव्यमित्युपपद्यते ।
   [Ayurveda Rasayana by Hemadri]

Stated in brief, the term *Vāta* comprehends the functions of the nervous system in all its different aspects viz., the central, vegetative and peripheral including the autonomous. The term *Pitta* comprehends all the processes implied in the metabolism, and *Kapha* comprises of the functions of the protoplasm and body fluids.

Vāta

Vāta is that primal constituent of the living body whose structure is *Ākāsa* and *Vāyu* and whose function is *Rājasic* (keinetic), as it is concerned with the production of those physical and mental processes which are predominantly *Rājasik* (activating or dynamic in nature).[1]

Its functions, as discribed by *Charaka* are: "*Vāta* is the upholder of both the structure and function in the body. It is the very self of the five forms of *Vāta* in the body viz., *Prāna*, *Udāna*, *Samāna*, *Vyāna* and *Apāna*. It is the impeller of the upward and downward movements."

The presence of *Vāta* is to be inferred in such mental phenomena as the exhibition of enthusiasm, concentration etc., as also physical phenomena, as the respiration ; circulation ; voluntary actions of every kind ; excretion and so on. It will be seen later that many of these physical and mental phenomena are included among those which the modern western physiologists assign primarily to the activities of the nervous system.

---

1. वायुस्तन्त्रयन्त्रधरः, प्राणोदानसमानव्यानापानात्मा, प्रवर्तकश्चेष्टामुच्चावचनां, नियन्ता प्रणेता च मनसः, सर्वेन्द्रियाणामुद्योजकः, सर्वेन्द्रियार्थानामभिवोढा,सर्वशरीरधातुव्यूहकरः, सन्धानकरः शरीरस्य, प्रवर्तको वाचः, प्रकृतिः स्पर्शशब्दयोः, श्रोत्रस्पर्शनयोर्मूलम्, हर्षोत्त्वसाहयोर्योनिः, समीरणोऽग्नेः, दोषसंशोषणः, क्षेप्ता बहिर्मलानां, स्थूलाणुरस्रोतसां भेत्ता, कर्तागर्भाकृतीनाम्, आयुषो अनुवृत्तिप्रत्ययभूतो भवत्यकुपितः । (Charaka : Sutra : 12: 8)

Pitta

Pitta is that primal constituent of the living body, whose structure is *Tejas* and whose function is *Sātvic*, as it is concerned with the production of those physical and mental processes which are predominantly *Sātvic* (balancing or transformative) in nature. Its functions are : "Vision (as opposed to perception which is due to *Vāta*), digestion, heat-production, hunger, thirst, softness and suppleness of the body, lustre, cheerfulness and intelligence."

The presence of *Pitta* is to be inferred in such mental phenomena like intellection and clear conception, as also such physical phenomena as digestion, assimilation, heat-production and so on. Many of the physical phenomena attributed to *Pitta* are among those which the modern western physiologists include under the activities of thermogenetic and nutritional systems (including thermogenesis and activities of glandular structures, especially enzymes and harmones, whose functions are of vital importance to digestion, assimilation, tissue building and metabolism generally.)[1]

Kapha

Kapha is that primal constituent of the living body whose structure is *Ap* and *Prithvi*, and whose function is *Tāmasic*, as it is concerned with the production of those physical and mental processes which are predominantly *Tāmasic* (conserving or stabilising) in nature. Its presence is to be inferred in such mental phenomena as the exhibition of courage, forbearance etc., as also such physical phenomena as the production of bodily strength and build, integration of the structural elements of the body into stable structures; the maintenance of

1. पञ्चिन्नवर्क्ति दर्शनमदर्शनं मात्रामात्रत्वमूष्मणः प्रकृतिविकृतिवर्णौ दौर्यं भयं क्रोधं हर्षं मोहं प्रसादमित्येवमादीनि चापराणि इन्द्रानीति । [Charaka, Sutra 12; 11

the smooth working of joints and so on. I
that many of the functions of *Kapha* are
which the modern western physiologists
the activities of the skeletal and anabolic s

The three Gunas—Satva, Rajas and

According to the ancient Indian view,
from the subtlest to the grossest, is charac
exhibition of the three *Gunas* or predicame
the very essence and substance of *Prak*
sense they are *Dravyas*. The functions w
are to reveal, to make active and to supp
vely. *Rajas* is dynamic. *Satva* an
neither reveal nor suppress without being
active by *Rajas*. Every living matter is ch
the three *Gunas* viz., *Rajas*, *Satva* and *Ta*
ingly, we have *Rajasic*, *Tamasic* and *Sat*
vegetables, food and drinks, drugs etc.
human being, like the life in any othe
nature must, therefore, necessarily exhib
fundamental triplicity viz., *Rajasic*, *Satvic*
which in the human being, is exhibited
and Matter as *Vata*, *Pitta* and *Kapha* tri
Tridosha triad—*Vata*, *Pitta* and *Kapha* re
living individual, these universal, inseparat
corresponding to Life, Mind and Matter,
principle, the psychic principle and p
principle in man.

ERATTA

Incorrect	Correct
[illegible]	some time
Yogasutras,	Yogasutrās
one another	each other
Dukkhas	Duhkhās
Ekantata	Ekāntata
environment	environment
of deterministic	
and deterministic	of deterministic
causation	causation
nda	and
is dispensable	indispensable
Chārvāka	Chārvāka
and possession	and the possession
Indriyas	Indriyās
Thamas	Tamas
analogy	analogy
1	
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1 [illegible]	[illegible]
[illegible]	[illegible]
2	
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[illegible]	[illegible]
Parinama	Parināma
2)	
1	
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[illegible]	[illegible]
Gandapada	Gandapada
Prithvi	Vayu
	After Ap add : The Gandha Tanmatra being produced from Ego is an evolute and it is an evolvent as it produces Prithvi
2	
[illegible]	[illegible]
Samyavastha	Sāmyāvasta
of evolution	of the evolutes
to composition	to their combination
Parāmānus	Paramānūs

46	20	Chetanas	Chetanás
47	20	evolutes	evolutes is significant
	23	at biological	at the biological
	27	life are	life, are
49	20	Sámkhyas	Sámkhyás
52	28	energy	Energy
54	27	now determinate	now as determinate
59	foot note 1		
	line 4	a	A
60	footnote 1		
	line 1	संभेलषसंहेषु	संश्लेषसंहेषु
61	15	time	Time
62	7	Avastha	Avasta
	footnote 1		
	line 3	बुद्धे विशेष	बुद्धेर्विशेष
	„ 5	स्वः	स्वः
	„ 5	क्षौ	क्षौ
66	18	Vaikarika	Vaikrita
	foot note 1		
	line 1	गुणवकुरेत्युपरिणाम	गुणवैकृतेत्युपरिणामः
71	foot note		
	line 3	सूत्रे	सूत्रे
73	16	Karanakasa	Karanakása
	17	on	un
75	4	proton-electron	proton-neutron
86	24	Samaha	Samaha
	foot note		
	line 1	गुणस्यवकुः क्षेत्रे	गुणस्यवकुर्वेदुपवमेवाव-गम्य
90	foot note 3	ब्रह्मुक	ब्रह्मुक
93	foot note 2	भवन्ति	भवन्ति
102	foot note 1		
	line 2	स्थोगस्तस्य	स्थोगस्तस्यं

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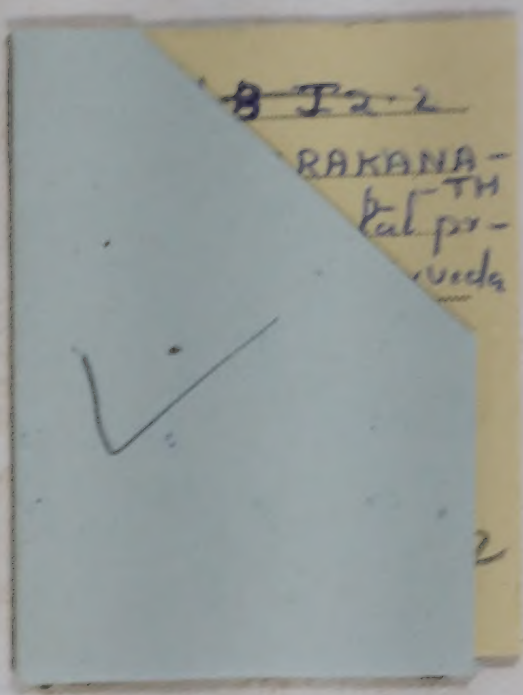
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